GREAT LAKES FOREST RESEARCH CENTRE
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A review of important forest insect and disease problems in the NORTH BAY DISTRICT of Ontario, 1950 - 1980

Compiled by

H. J. Weir, M. J. Thomson,
D. C. Constable and C. G. Jones

Miscellaneous Report No. 14

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A REVIEW OF IMPORTANT FOREST INSECT AND DISEASE PROBLEMS IN THE NORTH BAY DISTRICT OF ONTARIO, 1950-1980

Compiled by

H.J. Weir, M.J. Thomson, D.C. Constable and C.G. Jones[1]

GREAT LAKES FOREST RESEARCH CENTRE

CANADIAN FORESTRY SERVICE

DEPARTMENT OF THE ENVIRONMENT

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Department of the Environment
P.O. Box 490
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FOREWORD

The first forest insect surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of the Algonquin Park and Parry Sound forest districts, while personnel from the Forest Insect Laboratory in Sault Ste. Marie carried out surveys in the area to the north. In 1950 responsibility for reporting insects for all of Ontario fell to the Sault Ste. Marie laboratory. In 1952 the Forest Disease Survey was initiated with headquarters in Maple, Ontario, then was moved to Sault Ste. Marie in 1967. The results of these surveys of insects and diseases are reported in the Annual Report of the Forest Insect and Disease Survey (FIDS) published by Canadian Forestry Service headquarters in Ottawa. In addition, annual district and regional reports, begun in 1948, are prepared by FIDS technicians (Rangers) in Sault Ste. Marie. In 1980 a new provincial report was released in Ontario. The contents of the following review have been abstracted from these reports and compiled in alphabetical order by the scientific names of species in each of the following categories:

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs.

Minor Insects or Diseases

Capable of causing sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Abiotic Damage

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements from the earliest reports are taken to the second decimal point, i.e., [sq. mi. to km^2 = area (sq. mi.) x 2.59 = area km^2]. Infestation maps in this review were copied from the original maps in the FIDS technicians' reports. Abbreviations for the common names of the host tree species, along with the scientific names, are shown in Appendices A and B. To facilitate the location of hosts, deciduous and coniferous species have been separated and listed alphabetically under the common names.

Appendix C is a series of maps for northeastern Ontario grouped alphabetically by insect species or disease pathogen and showing the location of infestations within a region or infestation boundaries that extend beyond regions.

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1950-1951	A.A. Harnden, L.S. MacLeod, F.A. Bricault, J.M. Bussineau
1952	A.A. Harnden, L.S. MacLeod, F.A. Bricault, E.O. Clinton
1953	A.A. Harnden, M.J. Hildebrand, F.A. Bricault, E.O. Clinton
1954-1956	A.A. Harnden, M.J. Hildebrand, D. Grisdale, E.O. Clinton
1957	A.A. Harnden, H.J. Weir, D. Grisdale, J.R. McPhee
1958	L.S. MacLeod, H.J. Weir, D. Grisdale, J.R. McPhee
1959-1965	L.S. MacLeod, D. Trieselmann, C.A. Barnes, J.R. McPhee
1966	L.S. MacLeod, D. Trieselmann, C.A. Barnes, J.R. McPhee
1967	L.S. MacLeod, D. Trieselmann, C.A. Barnes, G. Cameron
1968	L.S. MacLeod, D. Trieselmann, C.A. Barnes, E.L. Houser
1969	L.S. MacLeod, D. Trieselmann, H.D. Lawrence, E.L. Houser
1970-1973	L.S. MacLeod, H.D. Lawrence, E.L. Houser
1974-1977	K.C. Hall, W.D. Biggs, L.S. MacLeod
1978-1980	K.C. Hall, H. Brodersen, L.S. MacLeod

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INTRODUCTION

This report is a review of significant insects and diseases that had a noticeable impact on forests and ornamental trees from 1950 to 1980 inclusive, and a brief summary of outbreaks prior to 1950 in the area covered by the present North Bay District. The North Bay District remained virtually unchanged from 1950 to 1973 when the northern portion was separated to form the present Temagami District.

In the selection of pests for this report, particular attention was paid to the major working groups of host species in the district, mainly white pine, red pine, jack pine, balsam fir, white spruce and black spruce and the tolerant hardwoods (sugar maple, red maple, white birch, yellow birtch and poplars), plus some ornamental and shade trees. The insects and diseases included are capable of causing or have caused tree mortality or a reduction in growth. Also included are abiotic problems that cause damage, i.e., frost, drought, winter drying, wind and snow damage.

SUMMARY

FOREST INSECTS

Birch Sawfly, *Arge pectoralis* (Leach) [Major]
page 11

Although this sawfly rarely causes notable damage to forest stands it is a serious pest of shade trees in urban areas. Defoliation seldom causes mortality but weakened trees are hosts for secondary insects and diseases which can cause serious damage and mortality.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
pages 11 - 19

This late-season insect was first recorded in the district by the Forest Insect and Disease Survey Unit in 1941. Defoliation occurs on both white birch and yellow birch and widespread outbreaks usually last from 3 to 4 years, then virtually collapse as was the case in 1950 and 1951, from 1961 to 1965, and from 1970 to 1973. Defoliation seldom causes mortality but weakened trees are hosts for secondary insects and diseases.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 20 - 25

Although there is no evidence of mortality caused by this insect, which defoliates vast areas of poplar forest, repeated defoliation undoubtedly reduces increment and weakens trees, predisposing them to attack by secondary insects. Varying degrees of defoliation were reported from 1957 to 1963, in 1969 and from 1971 to 1977.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 26 - 38

This insect is considered the most destructive pest of several coniferous species, i.e., balsam fir, white spruce, black spruce and larch. The most serious damage usually occurs to balsam fir. Repeated severe defoliation will cause top killing in about 3 years and whole-tree mortality usually occurs after 5 years. Low populations and occasional pockets of high populations were recorded from 1960 to 1969. In 1972 the current population began to increase and caused serious damage in many stands through to 1980. Top killing and tree mortality were evident in many stands by 1979, and extended from the north side of Lake Nipissing through the central part of the district northward to the northern district boundary. Quantitative sampling at seven points through this area revealed an average of 19% mortality.

Jack Pine Budworm, *Choristoneura pinus pinus* Free. [Major]
pages 39 - 45

This budworm is a serious pest of hard pines and is capable of causing tree mortality after two years of severe defoliation. The most recent outbreak of the insect started in 1965, when lightly infected trees were observed at several locations, and extended through to 1974. Persistent high populations from 1967 to 1971 caused top killing and tree mortality at several points in the infested area.

Larch Casebearer, *Coleophora laricella* (Hbn.) [Major]
pages 46 - 47

This casebearer is a serious pest of native and European larch. Moderate-to-severe defoliation causes reduced tree growth and some tree mortality after two successive years of severe defoliation. Populations have generally remained low or were not recorded from 1950 to 1980, except in 1972 when high populations were observed in the northern part of the district. The insect was first recorded in the district in 1941.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.) [Major]
pages 47 - 59

This insect, a serious pest of understory maple, causes reduced tree growth, branch and tree mortality after a lengthy period of repeated defoliation. Varying degrees of defoliation were recorded each year at scattered locations from 1950 to 1958, in 1960 and from 1970 to 1978.

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.) [Major]
page 60

This leaf tier occasionally defoliates large areas of poplar and undoubtedly reduces the growth of host trees; however, it is not known to cause tree mortality. Populations persisted in the district from 1959 to 1964 and caused moderate-to-severe defoliation at scattered points in 1963. Populations increased sharply in 1969 and again caused defoliation at scattered points each year until 1973 when only small numbers were found.

American Aspen Beetle, *Gonioctena americana* (Schaef.) [Major]
pages 61 - 62

This beetle often defoliates large areas of trembling aspen and undoubtedly reduces the growth of host trees but it is not known to cause tree mortality. Varying degrees of defoliation occurred from 1951 to 1980, with the most severe defoliation in 1959, 1960, 1970, 1971, and 1975.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages 62 - 82

Outbreaks of this caterpillar occurred from 1936 (or earlier) to 1938, from 1948 to 1956, from 1962 to 1967 and from 1973 to 1978. The period between outbreaks varies from six years to about 12 years. Trembling aspen, the preferred host, is seldom killed in an outbreak, but sugar maple and red oak are severely weakened and may suffer mortality if an infestation persists over an extended period or as a result of secondary insect or disease attack.

Balsam-fir Sawfly, *Neodiprion abietis* complex [Major]
pages 83 - 84

Recurring moderate-to-severe defoliation by this sawfly over a period of years is capable of causing top killing and occasional tree mortality. Moderate-to-severe defoliation was evident at scattered locations in 1952, 1953, 1969, 1970 and from 1975 to 1977.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) [Major]
pages 85 - 87

This pest of red pine plantations causes serious damage and tree mortality in small-diameter stands. Annual population trends are difficult to determine because of the effort by government agencies and private plantation owners to control populations by various means.

High populations of the sawfly occurred at scattered locations from 1950 to 1954 and in 1959, 1972 and 1973. Light damage was observed at some locations each year from 1950 to 1977 as well.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd. [Major]
page 88

This sawfly is capable of causing top killing and tree mortality in mature or nearly mature jack pine stands when high populations cause repeated severe defoliation of host trees over a period of years.

Pine Sawflies, *Neodiprion* spp. [Major]
pages 88 - 93

The sawflies listed in this report are capable of causing mortality of semimature and plantation jack pine trees when populations are high. Although no mortality surveys as such have been carried out, tree mortality was observed at one location where severe defoliation had occurred from 1955 to 1957. Defoliation by these sawflies was not recorded in the district prior to 1950.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) [Major]
pages 93 - 95

This serious pest of spruce was first reported in the district in 1938. The insect is capable of causing mortality in small-diameter spruce plantations, hedgerows and open stands. Varying degrees of damage caused by the pest were reported from 1950 to 1953, from 1955 to 1969, and in 1973, 1977 and 1978.

White Pine Weevil, *Pissodes strobi* (Peck) [Major]
pages 95 - 97

This weevil causes serious damage to all species of pine and spruce. Attack by the insect destroys the terminal leader as well as much of the previous year's growth, thereby reducing height growth and eventually causing crooked stems if the tree is subjected to repeated attack. It is considered the most serious insect pest of white pine in North America. Varying degrees of leader mortality have been recorded in the district since 1953.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages 97 - 106

Infestations of the larch sawfly were reported in the district from 1937 to 1941, from 1954 to 1960, from 1966 to 1971 and in 1977. Larch trees put out new foliage after defoliation; therefore, increment loss is not apparent for 4 to 5 years. Considerable tree mortality occurs, usually after six to nine years of repeated severe defoliation.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) [Major]
pages 107 - 108

Although mountain-ash is not considered a merchantable species, many are used as shade and ornamental trees in urban areas. Prolonged infestations of the mountain-ash sawfly can weaken trees and leave them vulnerable to attack by secondary insects or diseases. Populations varying in intensity were reported each year from 1953 to 1980.

Birch Leafminers, *Profenusa thomsoni* (Konow), *Fenusa pusilla* (Lep.)
pages 109 - 112 [Major]

Although these insects have not been known to cause tree mortality, their leafmining does weaken trees after repeated attack, and the unsightly appearance of the damaged foliage on shade and ornamental trees causes a good deal of concern to owners in urban areas.

Other Noteworthy Insects [Major and Minor]
pages 112 - 124

Insects with the potential for causing varying amounts of damage to stands, regeneration and plantations.

FOREST DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kumm. [Major]
page 127

This root rot is capable of killing both weakened and healthy trees. Most tree species are susceptible to attack. The fungus has been reported periodically from 1954 to 1980, and occasionally tree mortality has been recorded.

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau [Major]
pages 127 - 128

This disease was first positively identified and reported in 1962. The incidence of the disease and the inevitable mortality of white elm have increased throughout the entire district.

Needle Rust, *Chrysomyxa ledi* (Alb. & Schw.) d By. and *C. ledicola* Lagh. [Major]
page 129

Although these rusts do not generally cause serious damage, loss of increment during severe infection has been noted. The disease has been reported periodically since 1960 in the district; however, no evidence of serious damage has been found.

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver [Major]
pages 129 - 131

This disease destroys the foliage of aspen in early summer, causing a loss of increment during periods of severe infection. Pockets of moderate-to-severe infection were observed at scattered locations in 1958 and 1959, from 1962 to 1967 and again from 1974 to 1976. Light damage occurred in most of the intervening years as well.

Sweet-fern Blister Rust, *Cronartium comptoniae* Arth. [Major]
pages 131- 132

This disease causes serious damage to jack pine. Seedlings and young stands suffer mortality until they reach a diameter of about 6 cm. The butt cankers formed on infected trees cause a considerable loss in volume when the stand reaches a merchantable age. The pathogen was first reported in the district in 1959. Surveys since 1959 have revealed varying degrees of damage in many stands.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fisch. [Major]
pages 133 - 134

This introduced disease is particularly damaging to white pine of all ages throughout its range in Ontario. The pathogen was first reported in the district in 1955. Surveys since that time have revealed incidences of infection ranging as high as 42%.

Needle Cast, *Davisomycella ampla* (Davis) Darker [Minor]
pages 134 - 135

This needle cast fungus is capable of retarding the growth of jack pine when heavy infection occurs. Varying degrees of infection have been observed periodically since it was first recorded in the district in 1958.

Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirat. [Major]
pages 135 - 136

This gall-forming pathogen causes serious damage in jack pine stands by girdling branches of larger trees and stems in reproduction areas. Considerable mortality occurs in infected seedlings. Varying incidences of infection have been noted in many stands since it was first recorded in the district in 1955.

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet [Major]
pages 136 - 137

This disease is particularly damaging to young pine trees in plantations and in some instances regeneration suffers severe damage. Over a number of years intensive surveys have been carried out to determine the distribution of this pathogen. In 1966, the disease was recorded for the first time in the district when a high incidence of infection (90%) was found in a red pine plantation in French Twp. Infection was also recorded on jack pine trees in the area. Since the initial discovery of the disease in 1966, new infection centres have been found in Bastedo, Boulter, Phelps and Field twps.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller [Major]
pages 137 - 138

This disease usually attacks trees in the 6- to 12-cm diameter class growing on marginal and poor sites. Affected trees were present in many stands examined in 1953, the first year that surveys for the pathogen were carried out in the district. Continuing surveys since 1953 have revealed incidences of infection as high as 70%. Varying amounts of mortality inevitably occur in affected stands.

Needle Cast, *Lophodermium pinastri* (Schrad. ex Hook.) Chev. [Minor]
page 139

This disease causes defoliation of pines of all ages. The incidence of infection is often high after trees have been subjected to an abiotic condition such as drought, winter drying, etc. Widespread severe infection was recorded in 1957. Varying degrees of infection were observed at scattered points in 1967, 1973 and 1979.

Shoot Blight, *Venturia macularis* (Fr.) Muller & Arx. [Major]
pages 139 - 140

This disease kills the current shoots of aspen regeneration and can cause a major reduction in height growth and high numbers of deformed stems when the incidence of infection is high. Severe damage was recorded at scattered locations in 1962, 1964, 1967 and 1977.

Other Noteworthy Diseases [Major and Minor]
pages 140 - 144

These are diseases with potential for causing damage to stands, regeneration and plantations.

ABIOTIC DAMAGE

pages 147 - 150

This condition is caused by a variety of influences, i.e., frost, drought, winter drying, wind and snow. Abiotic damage was recorded in the district in 1953, 1959, 1960, from 1964 to 1967, from 1970 to 1973, and in 1976, 1977 and 1980.

INSECTS

Birch Sawfly, *Arge pectoralis* (Leach)

Host(s): birch [Major]

Year	Remarks
1950	Moderate-to-severe defoliation of white birch was observed in Hobbs Twp.
1951-1953	not reported
1954	Light infestations were detected in McCallum and Gooderman twps.
1955-1969	not reported
1970	Small numbers of larval colonies were observed at numerous locations.
1971-1980	not reported

Birch Skeletonizer, *Bucculatrix canadensisella* (Cham.)

Host(s): birch [Major]

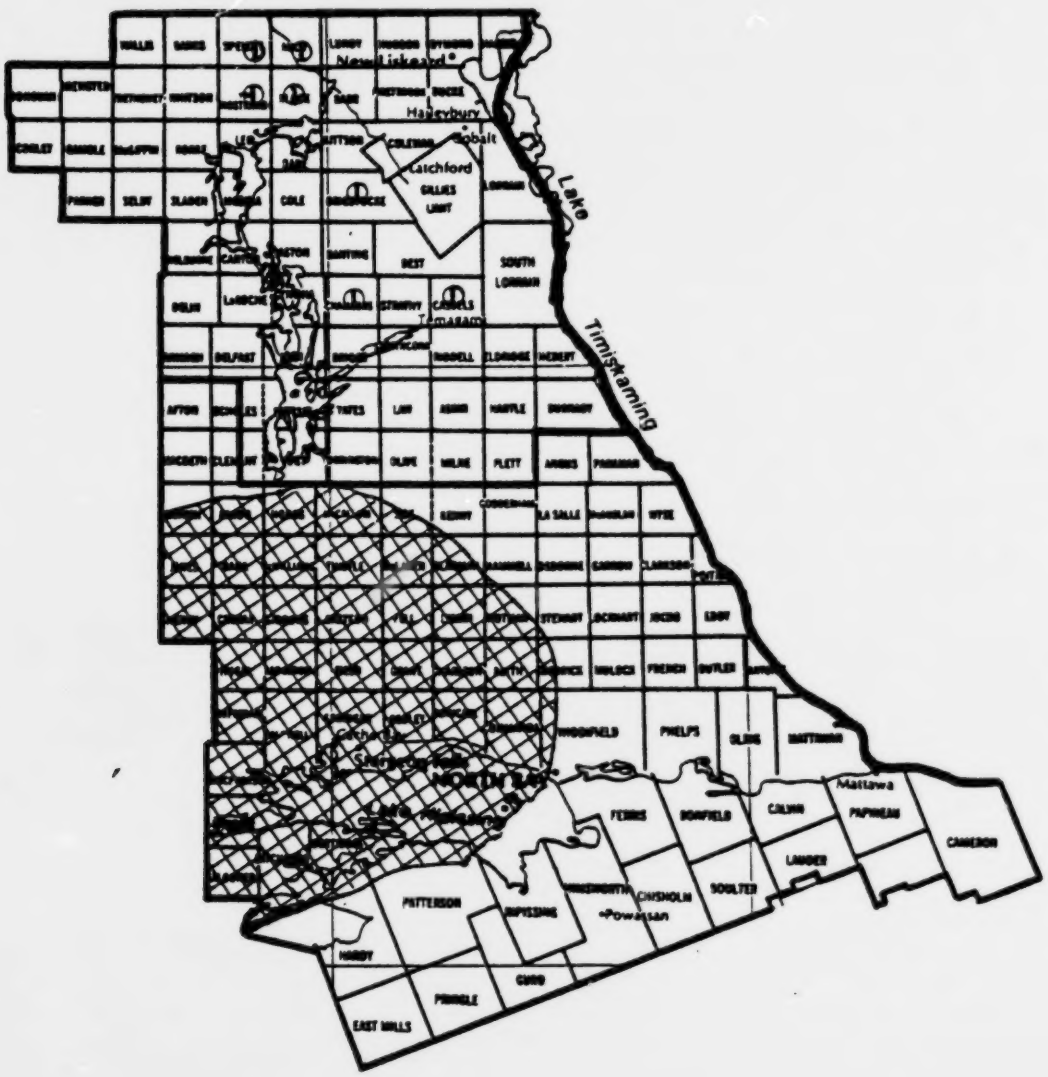
Year	Remarks
1950	A heavy infestation caused moderate-to-severe defoliation through most of the western half of the district (see map, page 13).
1951	The heavy infestations previously reported collapsed in 1951.
1952-1960	not reported
1961	High populations caused moderate-to-severe defoliation of birch stands throughout approximately three-quarters of the district.(see map, page 14).
1962	High populations recurred and caused moderate-to-severe defoliation of birch stands throughout the entire district.

(cont'd)

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. (concl.)

Year	Remarks
1963	Moderate-to-severe defoliation of white and yellow birch stands occurred throughout the southern, eastern and northeastern parts of the district; however, defoliation was less severe in the northwestern part (see map, page 15).
1964	Populations declined to low intensity in the southern, eastern and northeastern parts of the district. The western part of the district was relatively free of the insect.
1965	Populations declined for the third consecutive year, leaving birch stands relatively free of damage except in the northeastern part of the district, where small areas of light defoliation were observed.
1966-1969	not reported
1970	A high population of this insect caused moderate-to-severe defoliation to white birch foliage in the southeastern part of the district (see map, page 16).
1971	Populations increased and spread through approximately three-quarters of the district, leaving only the northern part free of defoliation (see map, page 17).
1972	The area of infestation increased; birch stands throughout the entire district were infested (see map, page 18).
1973	Populations declined to light intensity in the southeastern part of the district; elsewhere populations remained high and caused moderate-to-severe defoliation in birch stands (see map, page 19).
1974	infestation collapsed
1975-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation occurred in 1950

LEGEND

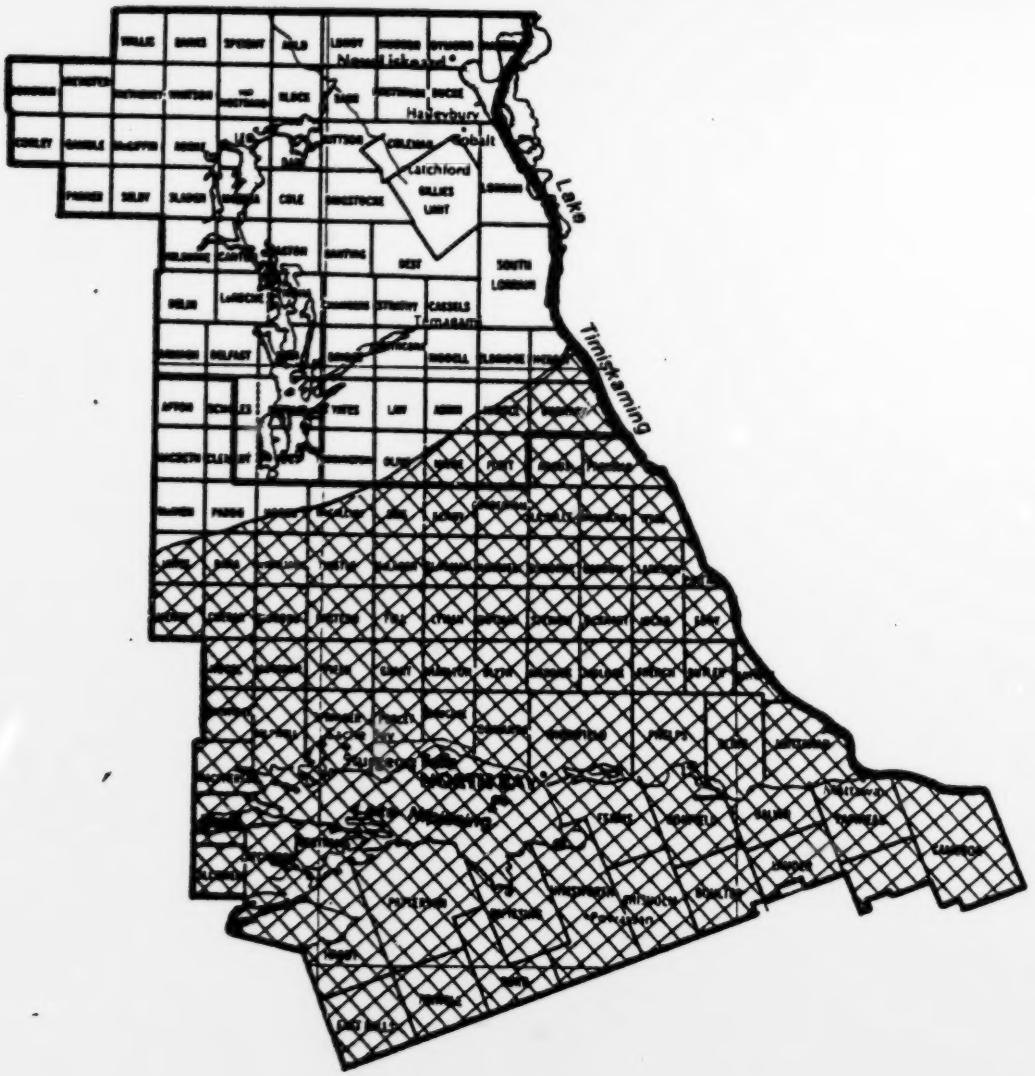
Light defoliation ①

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



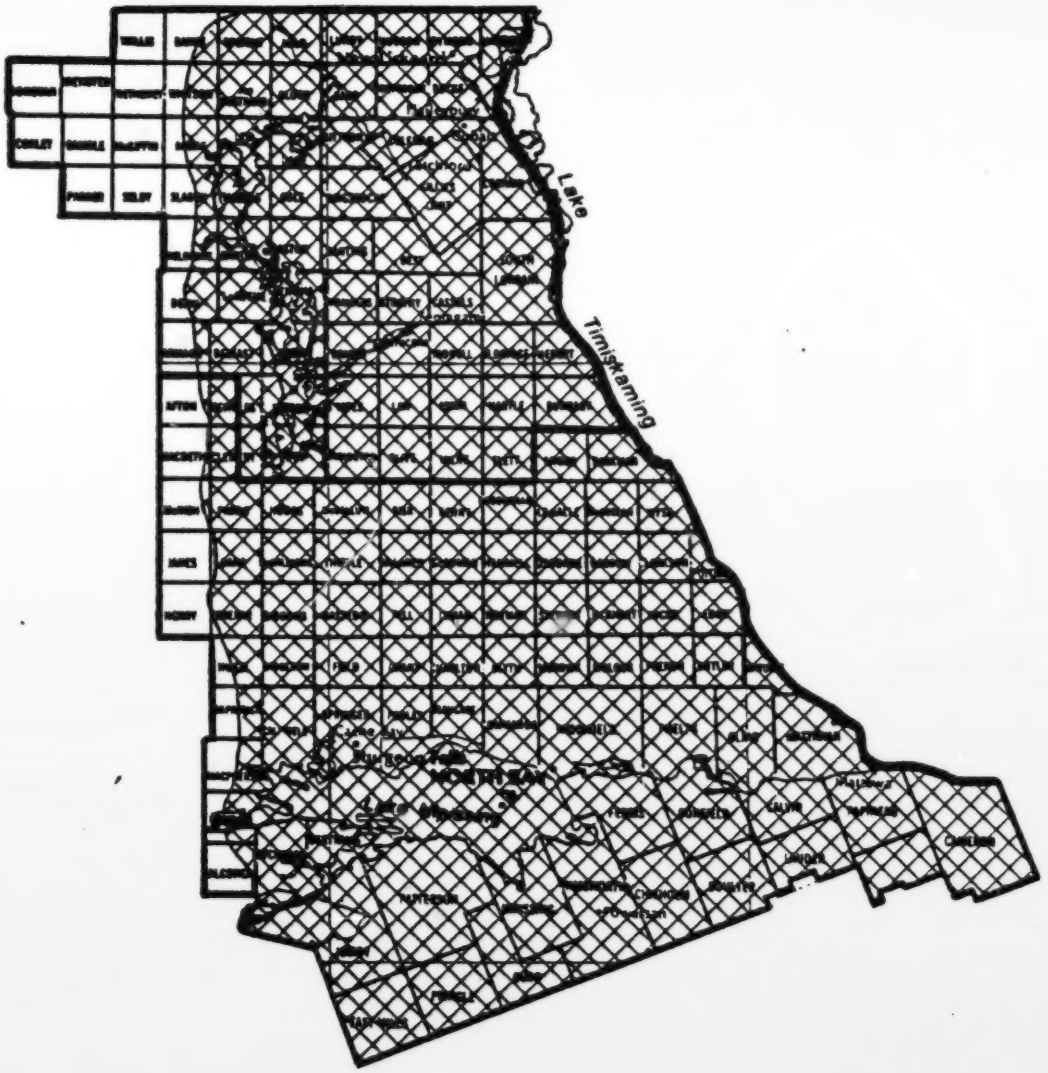
Birch Skeletonizer

Areas within which defoliation occurred in 1961

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

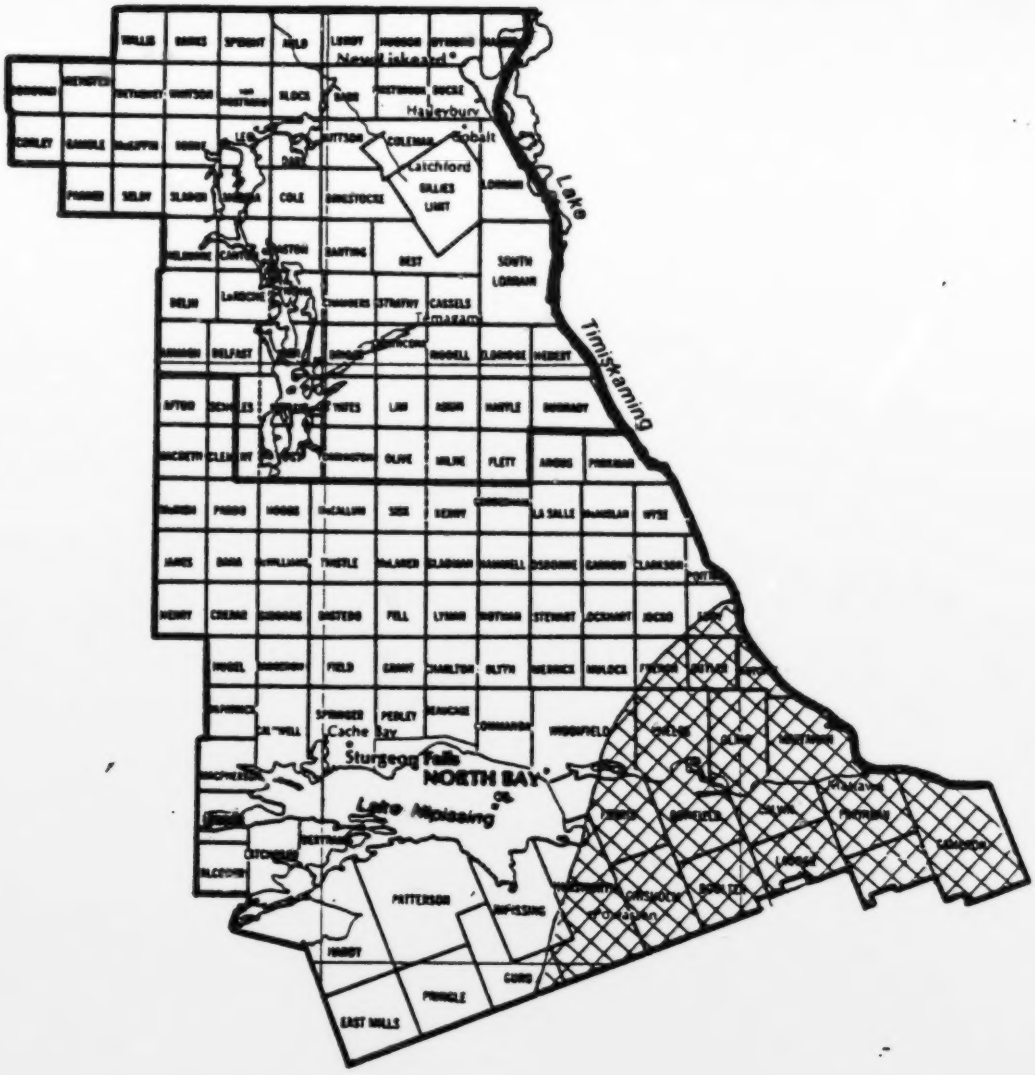
Birch Skeletonizer

Areas within which defoliation occurred in 1963

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

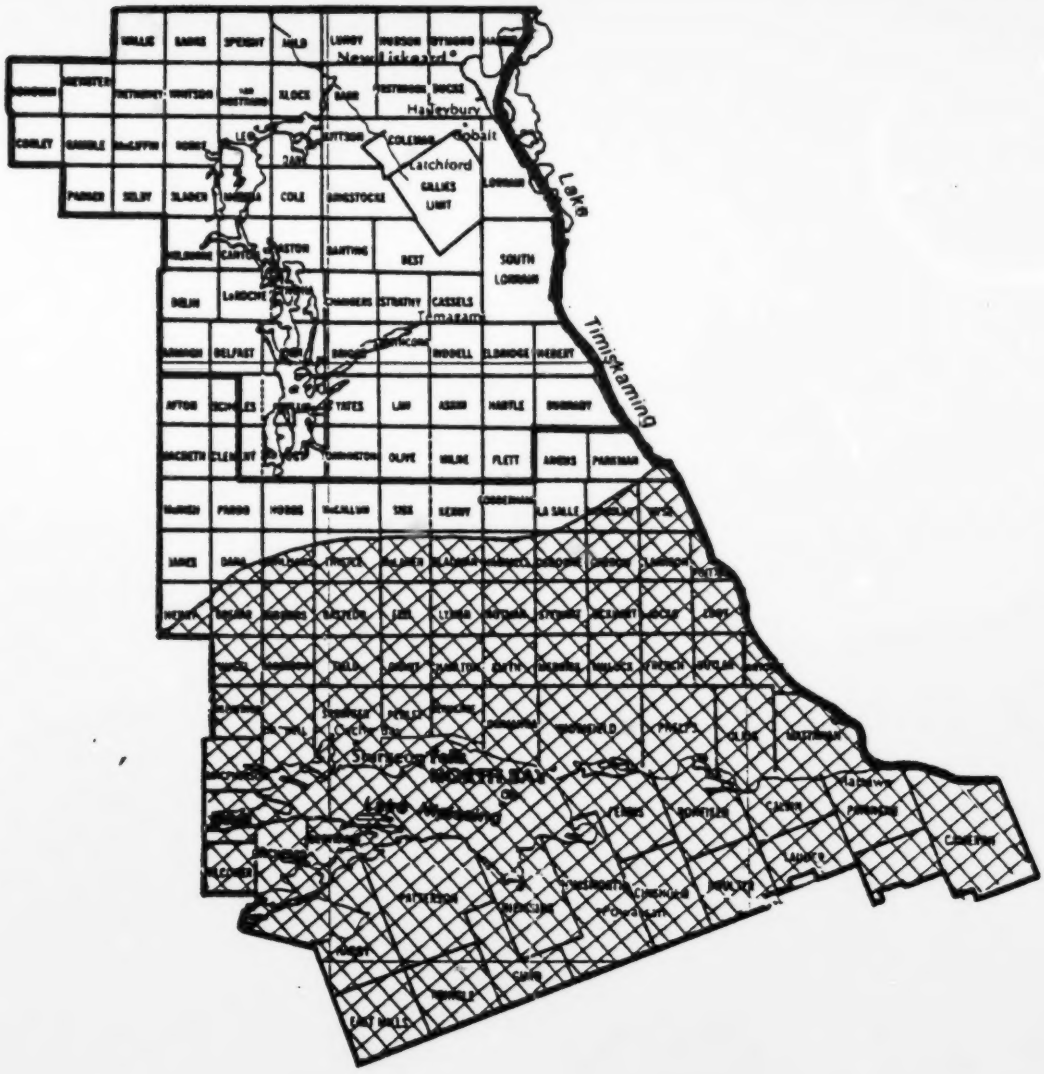
Birch Skeletonizer

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

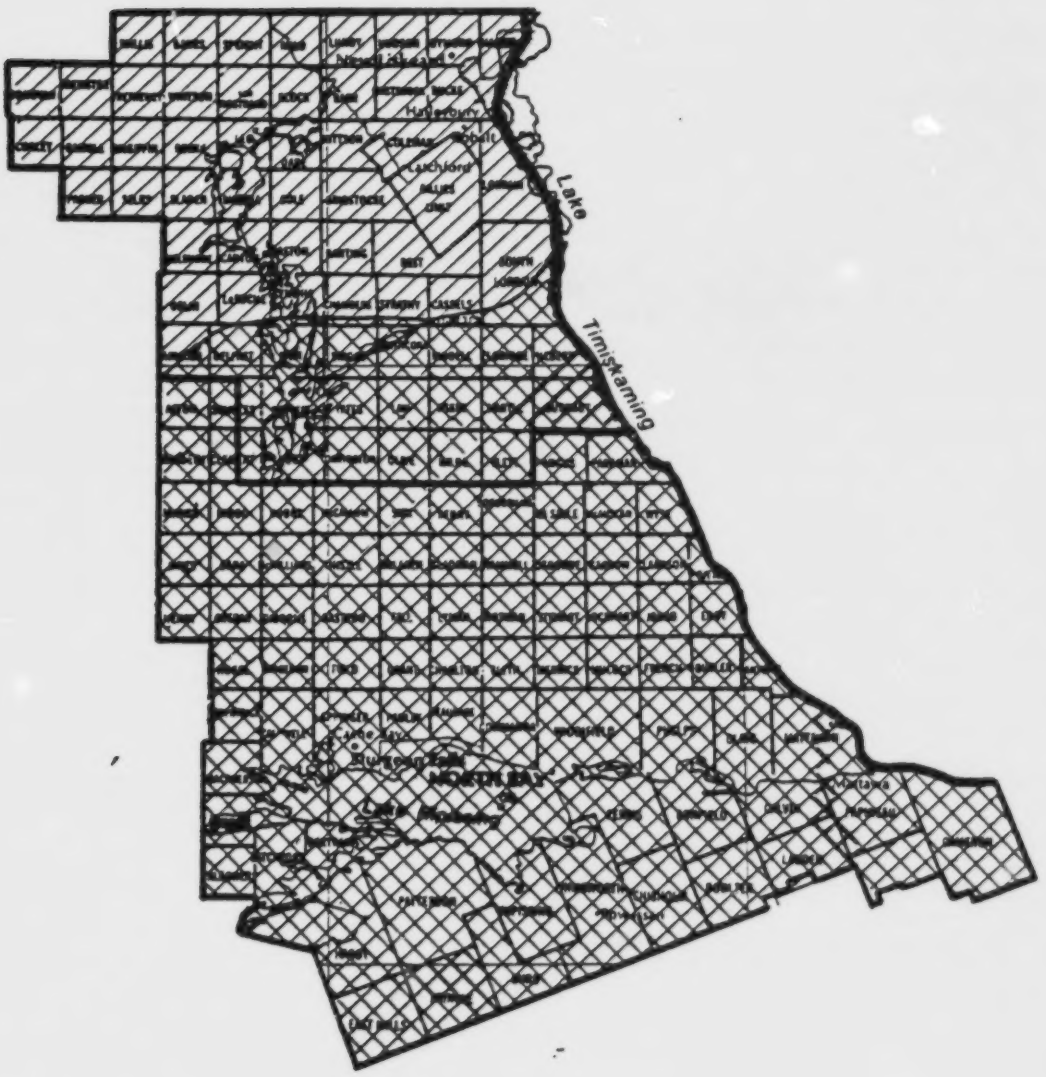
Birch Skeletonizer

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation occurred in 1972

LEGEND

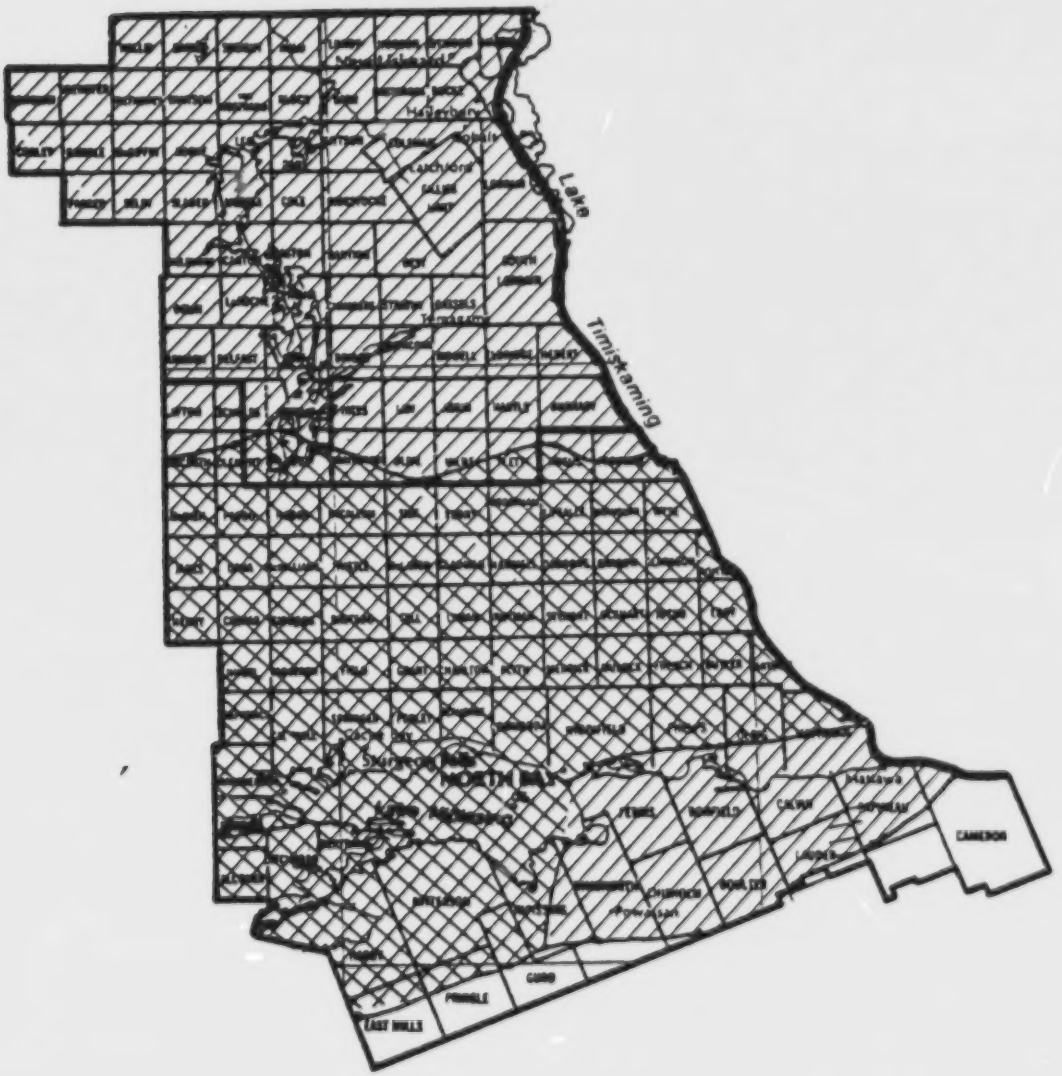
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Birch Skeletonizer

Areas within which defoliation occurred in 1973

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation

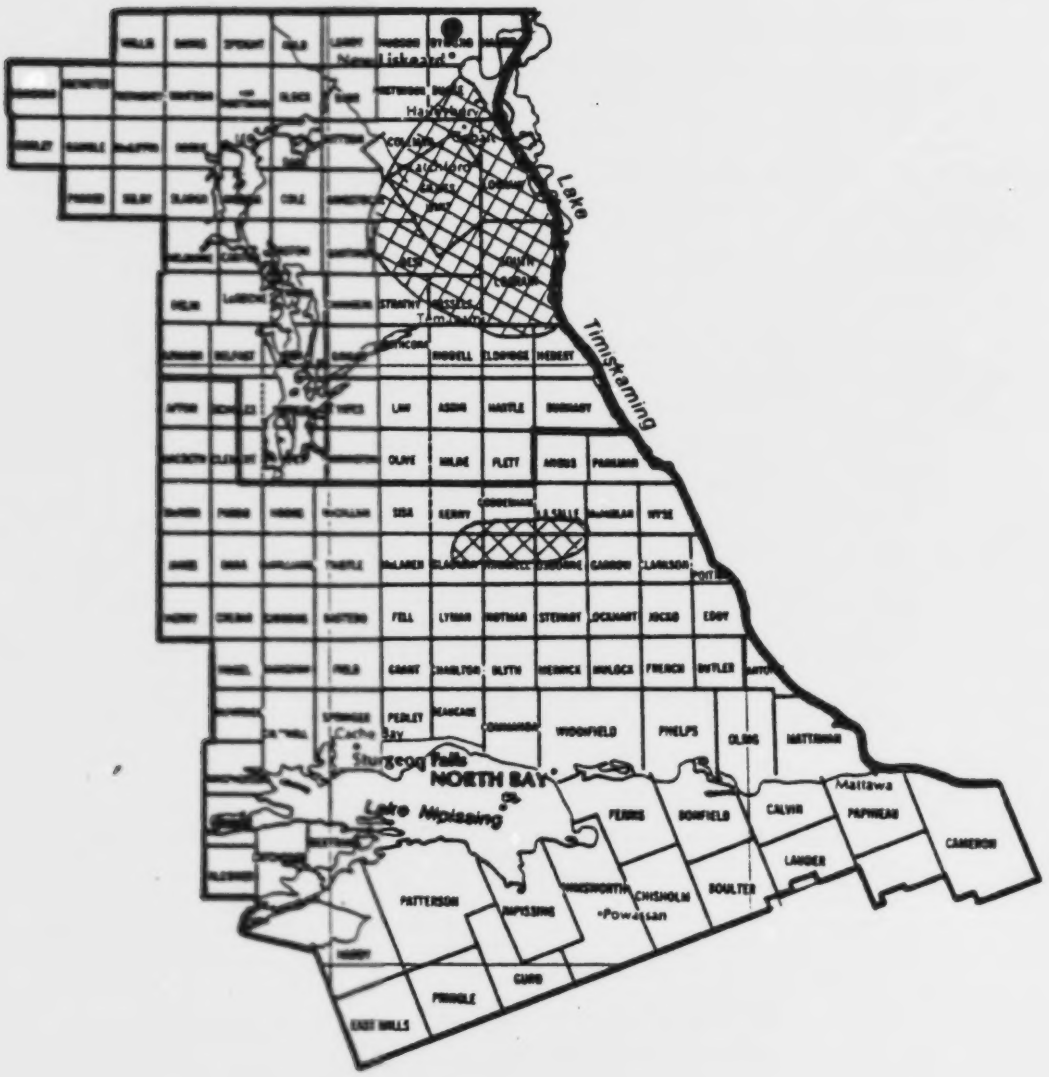
Moderate-to-severe defoliation

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Host(s): poplar [Major]

Year	Remarks
1950-1956	not reported
1957-1958	Low populations were observed at several locations in the district.
1959	Small numbers were observed in Calvin Twp.
1960-1963	Trace populations occurred at widely separated points.
1964-1968	not reported
1969	Light infestations were common in the northern part of the district. Small numbers of larvae were easily found elsewhere.
1970	not reported
1971	A small area of moderate-to-severe defoliation of aspen stands was found in the northeastern part of the district (see map, page 21).
1972	Defoliation by this insect increased in extent and intensity. The infestation previously reported in the northeastern part of the district more than doubled in size and a new area of medium-to-heavy infestation was found in the central part of the district (see map, page 22).
1973	Pockets of medium-to-heavy infestation recurred in the northern half of the district (see map, page 23).
1974	Pockets of heavy infestation persisted and caused moderate-to-severe defoliation of aspen stands at four locations in the northern half of the district (see map, page 24).
1975	Populations declined to light intensity in areas infested in 1974, but increased at other locations and caused moderate-to-severe defoliation in these newly infested areas (see map, page 25).
1976	Moderate-to-severe defoliation of aspen stands was evident at several points in Papineau and Phelps twps. Populations declined through the remainder of the district.
1977	Populations declined to small numbers at widely separate points.
1978-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

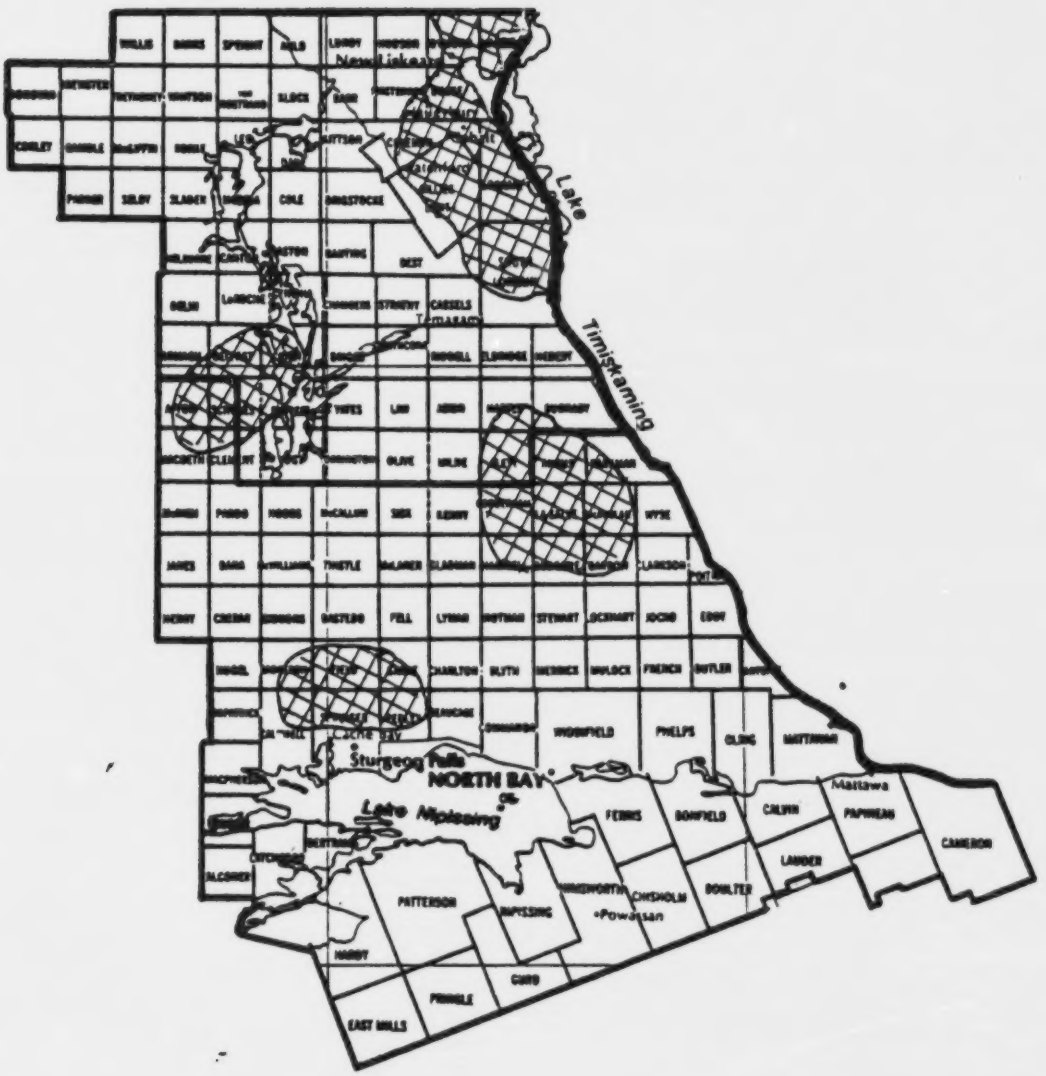
Large Aspen Tortrix

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Large Aspen Tortrix

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

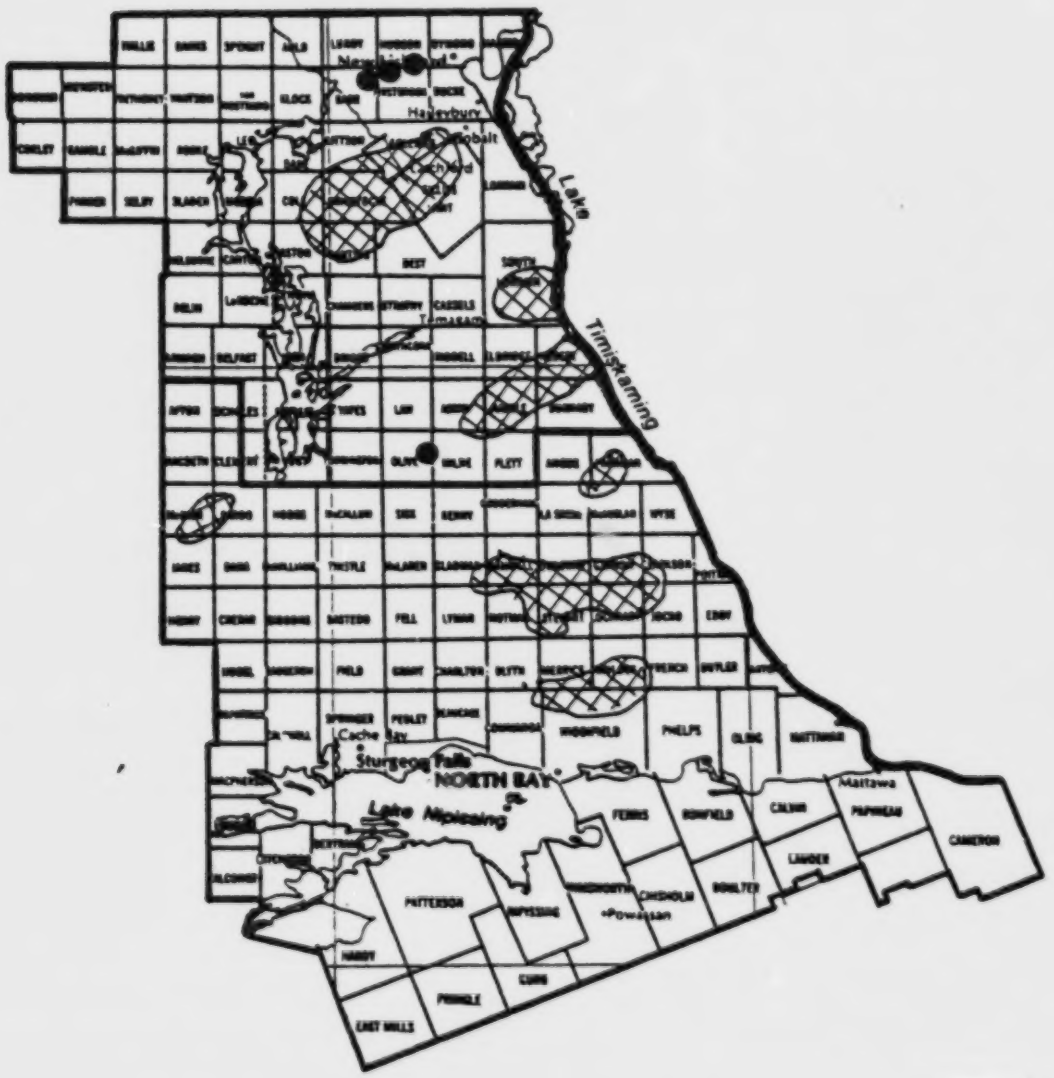
Large Aspen Tortrix

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Large Aspen Tortrix

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Large Aspen Tortrix

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): spruce, bF, larch [Major]

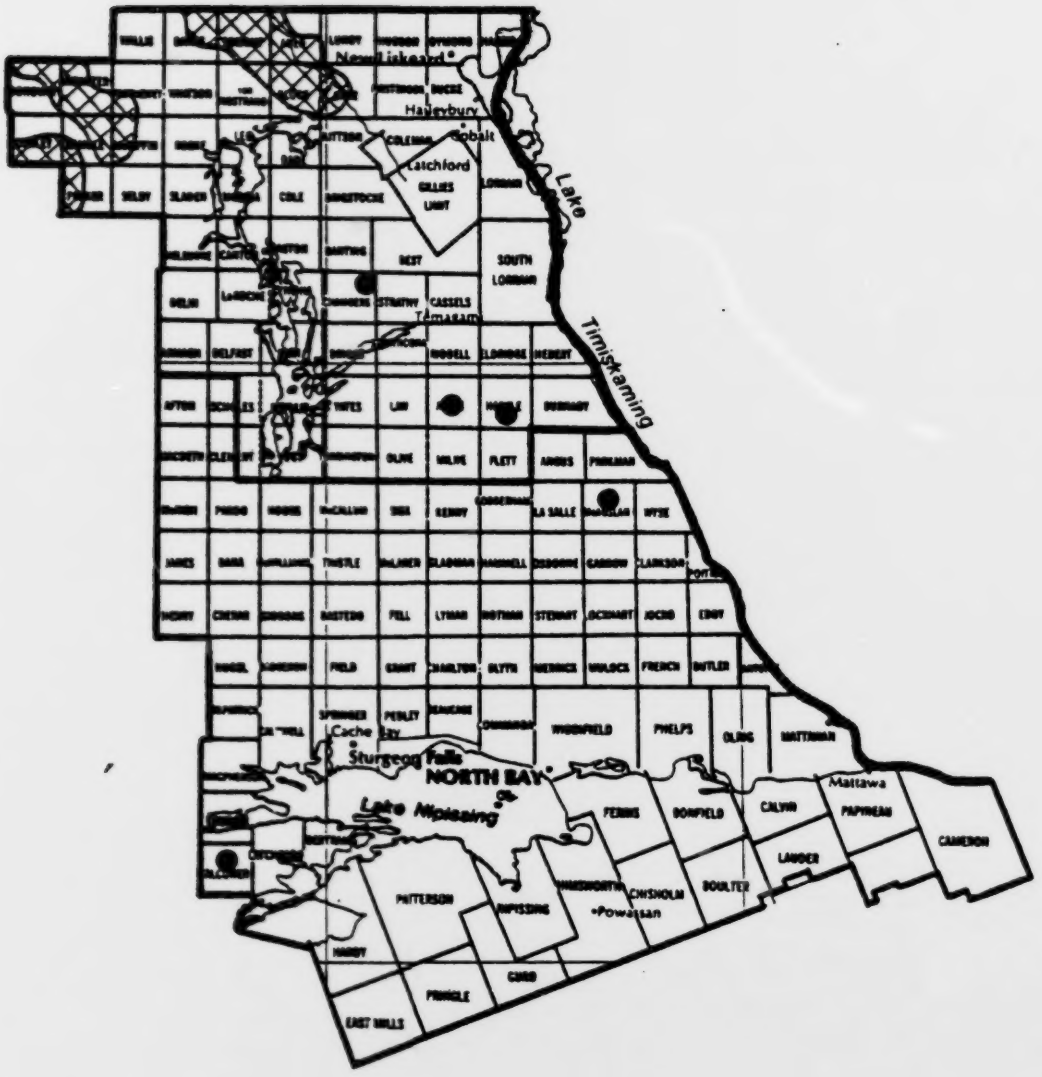
Year	Remarks
1950-1959	not reported
1960	several larvae taken in beating samples from the northern part of the district
1961-1965	small numbers of larvae observed at widely separated locations
1966	The population of this insect increased appreciably and larvae were observed in numerous white spruce and balsam-fir stands at several locations in the district.
1967	There was little change in the population of this insect from the previous year except in Badgerow Twp where a very small pocket of heavy infestation was found.
1968	A pronounced increase in populations was evident when severe defoliation was found at two locations in Crerar Twp. Lightly defoliated trees were observed at many locations in the southern part of the district as well.
1969	Populations increased slightly and light defoliation was observed at several points in Hugel and Badgerow twps.
1970-1971	not reported
1972	Small pockets of moderate-to-severe defoliation occurred in Falconer and McAuslan twps (see map, page 28).
1973	A marked increase in the population of spruce budworm caused moderate-to-severe defoliation in host stands through parts of 15 townships in the northwestern part of the district. Small areas of moderate-to-severe damage were also evident in Badgerow, Falconer and Hardy twps (see map, page 29).
1974	The area within which moderate-to-severe defoliation occurred increased markedly over the previous year. Damage extended from the northern boundary of the district southward to Lake Nipissing. Small areas of infestation were observed south and east of Lake Nipissing and in the northeastern part of the district (see map, page 30).

(cont'd)

Spruce Budworm, *Choristoneura fumiferana* (Clem.) (concl.)

Year	Remarks
1975	The area of spruce budworm infestation increased and caused moderate-to-severe defoliation in host stands through approximately half the district (see map, page 31).
1976	A general reduction in the area infested by the budworm was evident (see map, page 32).
1977	Little change occurred in the area of infestation over the previous year (see map, page 33).
1978	The area infested by the insect increased and caused moderate-to-severe defoliation through most of the district (see map, page 34).
1979	High populations of the budworm persisted and moderate-to-severe defoliation was evident through more than 95% of the district (see map, page 35). Repeated defoliation over the past several years has caused extensive whole-tree or top mortality through a large area in the northeastern part of the district (see map, page 36).
1980	The spruce budworm population remained high and caused moderate-to-severe defoliation of host species throughout the entire district (see map, page 37). The area within which whole-tree or top mortality occurred increased in extent in the northeastern part of the district and small areas of budworm-caused mortality were observed at scattered locations in the southern part (see map, page 38).

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

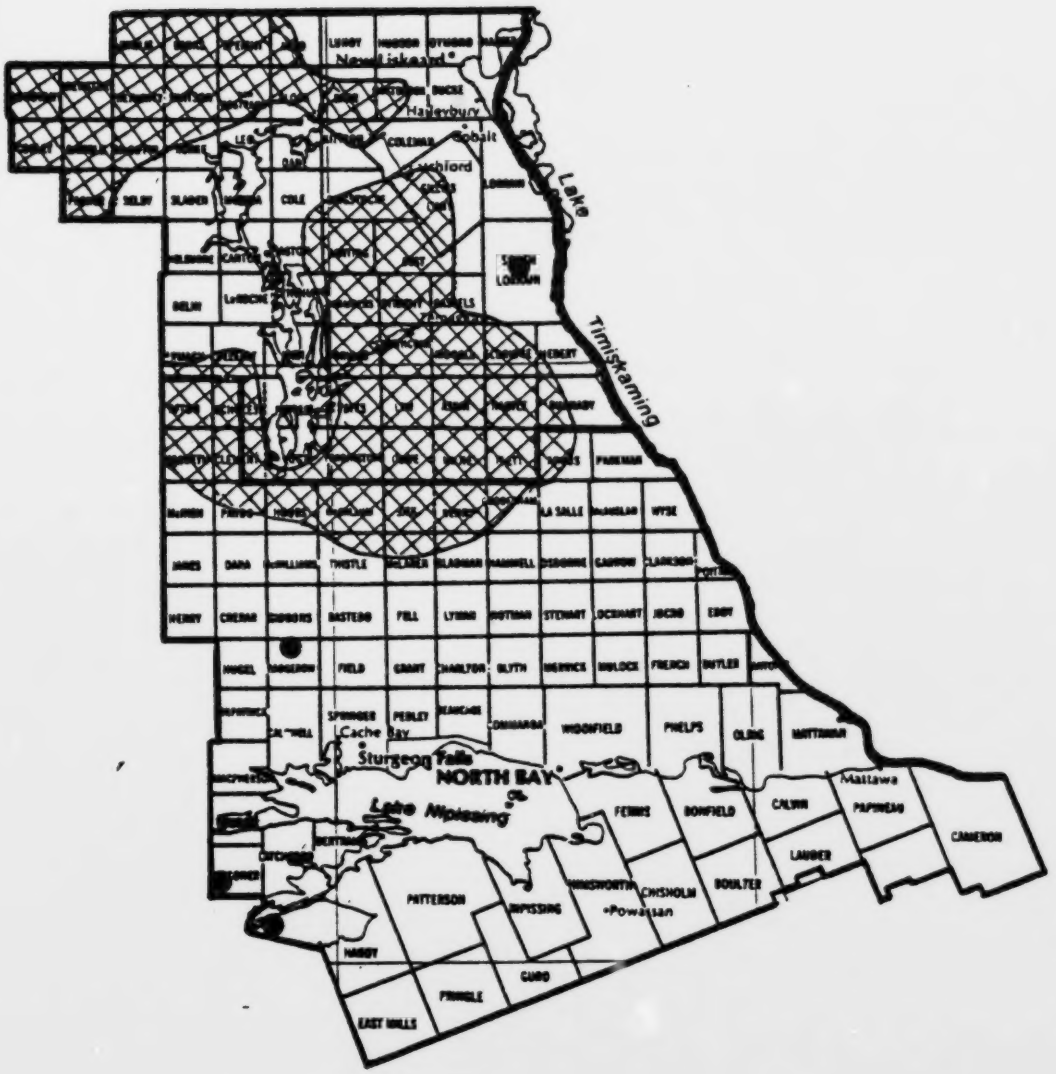
Spruce Budworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

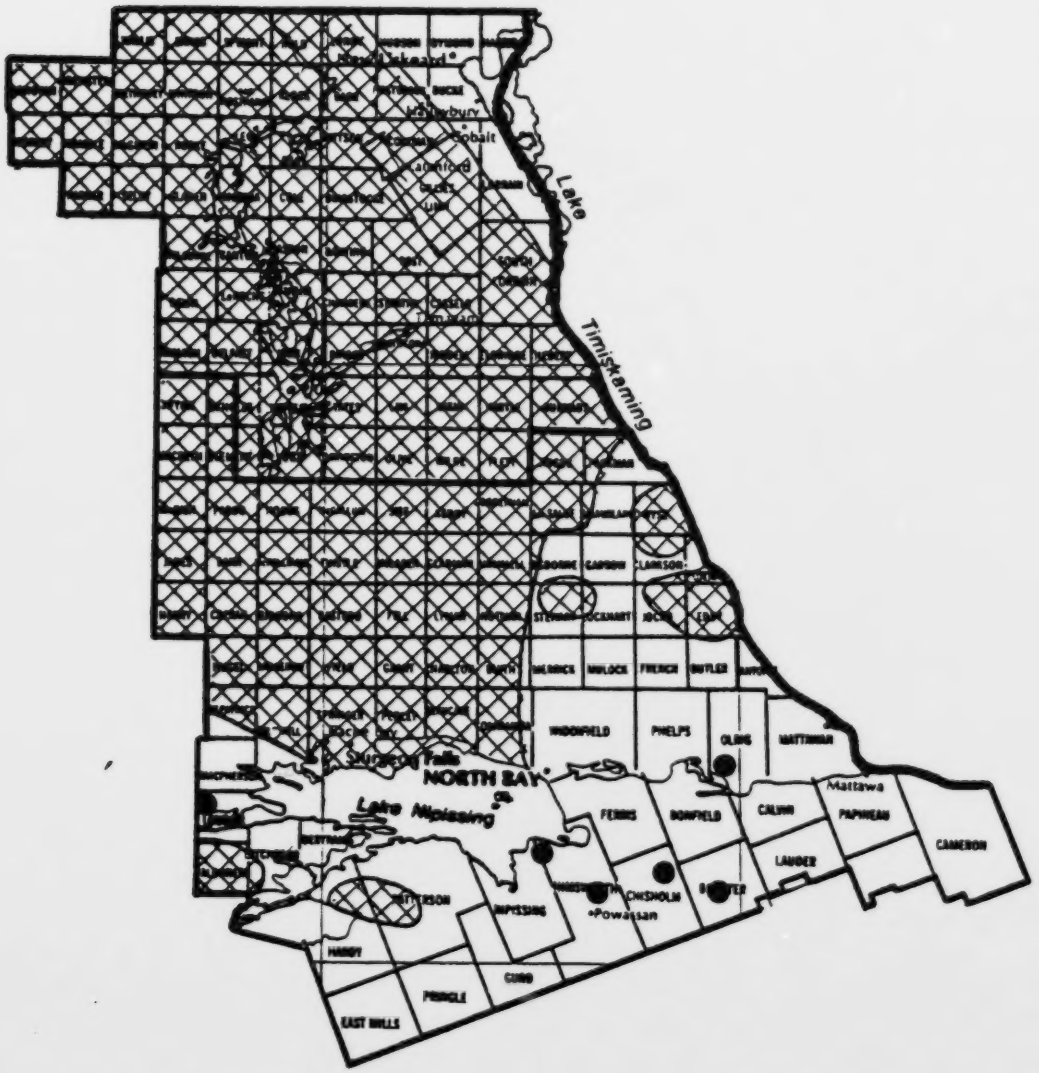
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

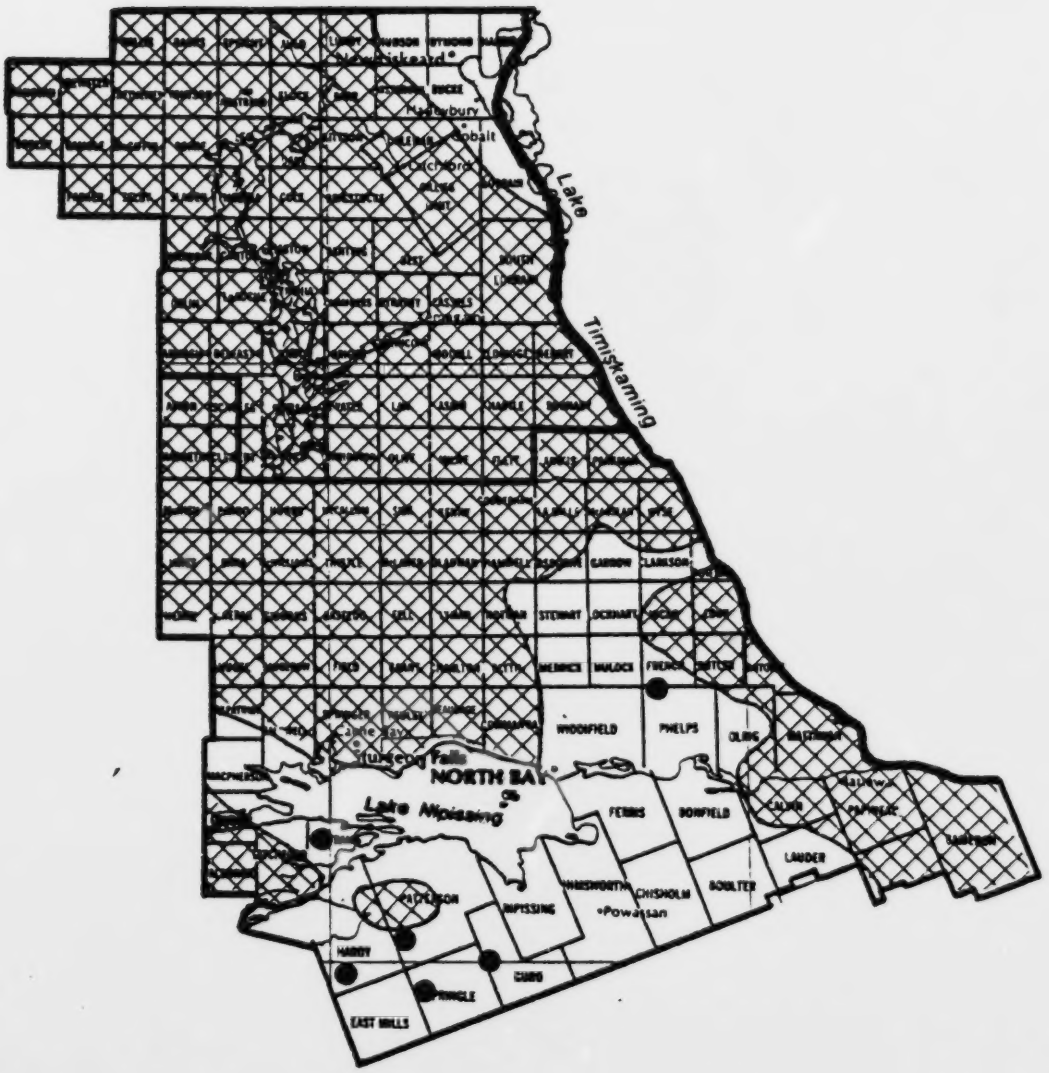
Spruce Budworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

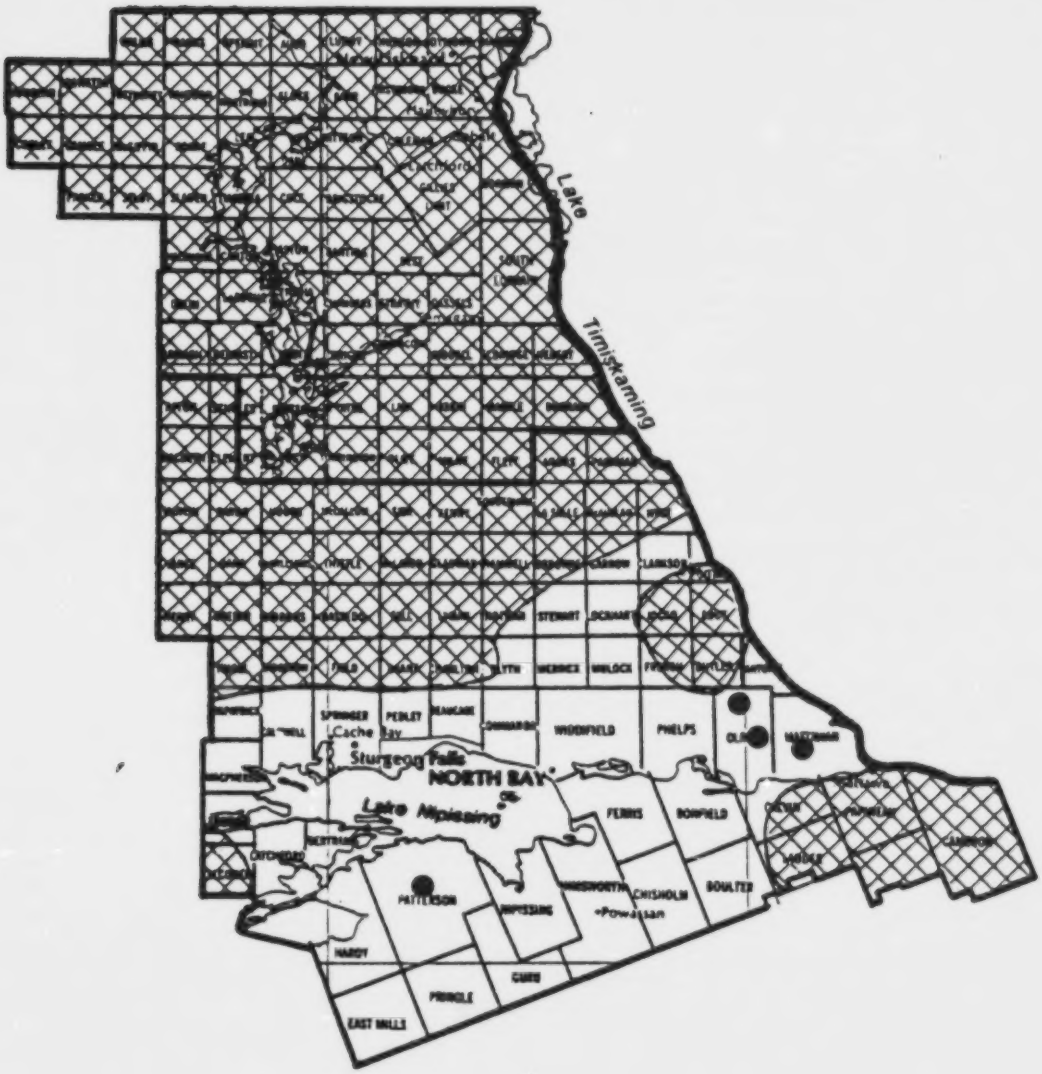
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Spruce Budworm

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

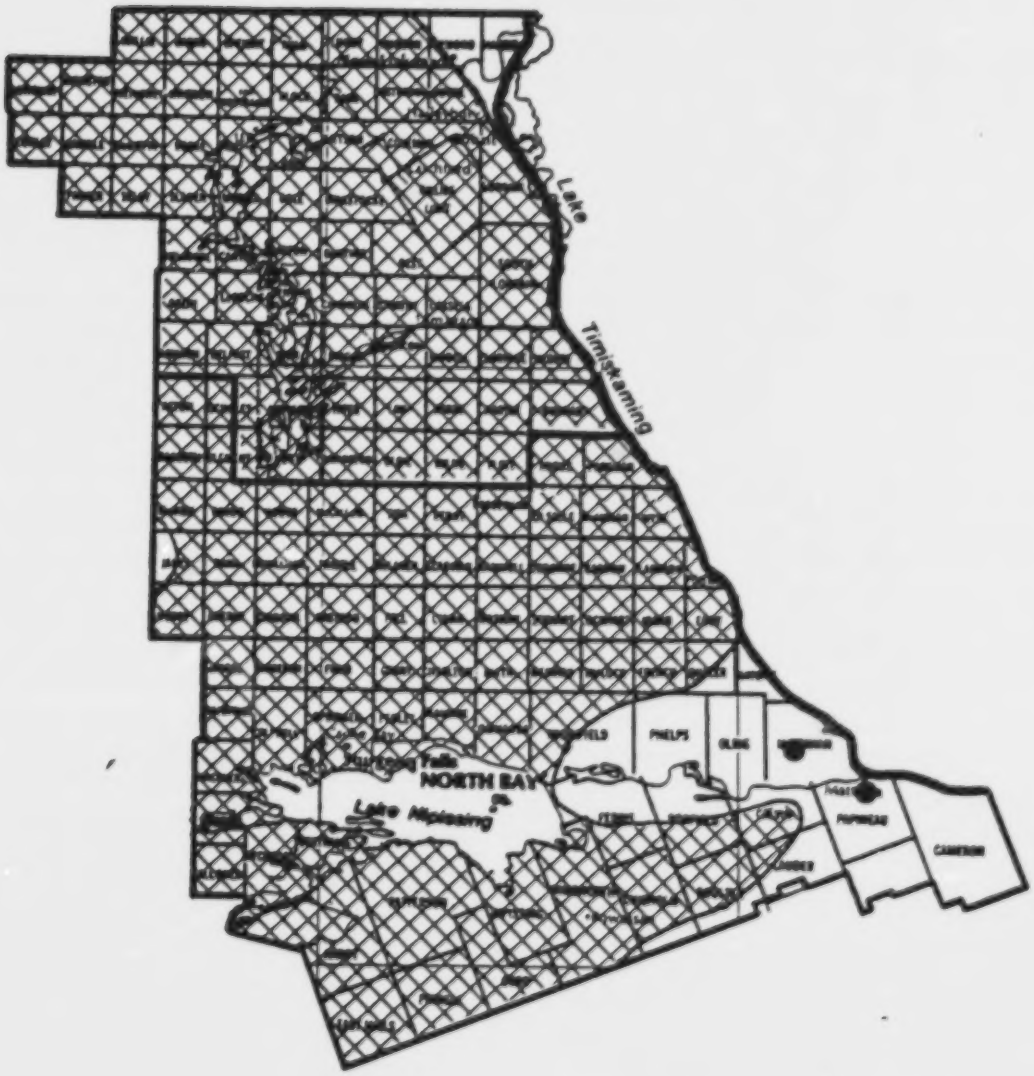
Spruce Budworm

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometers 20 10 0 20

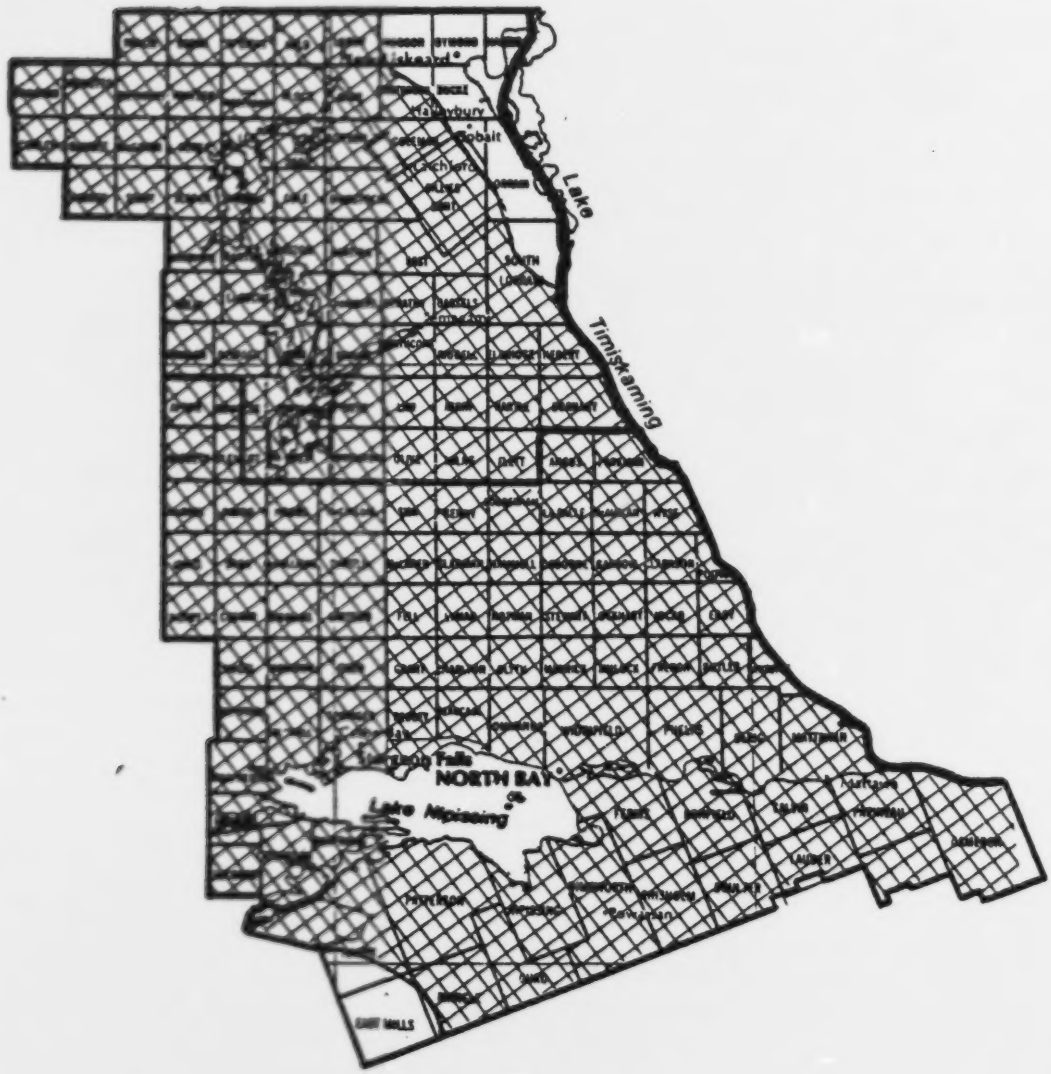
Spruce Budworm

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

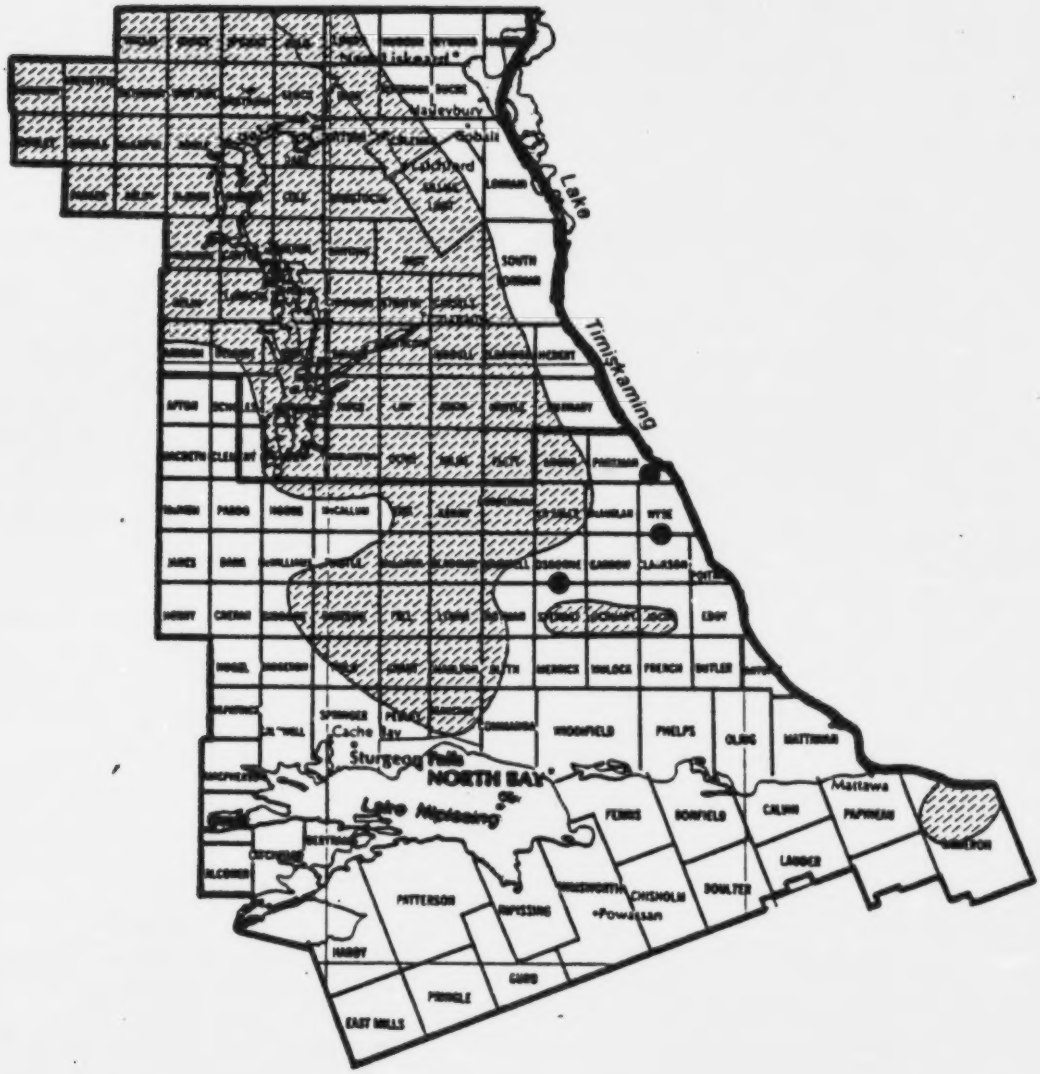
Spruce Budworm

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Spruce Budworm

Areas within which whole-tree and top mortality occurred in 1979

LEGEND

Mortality ● or

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

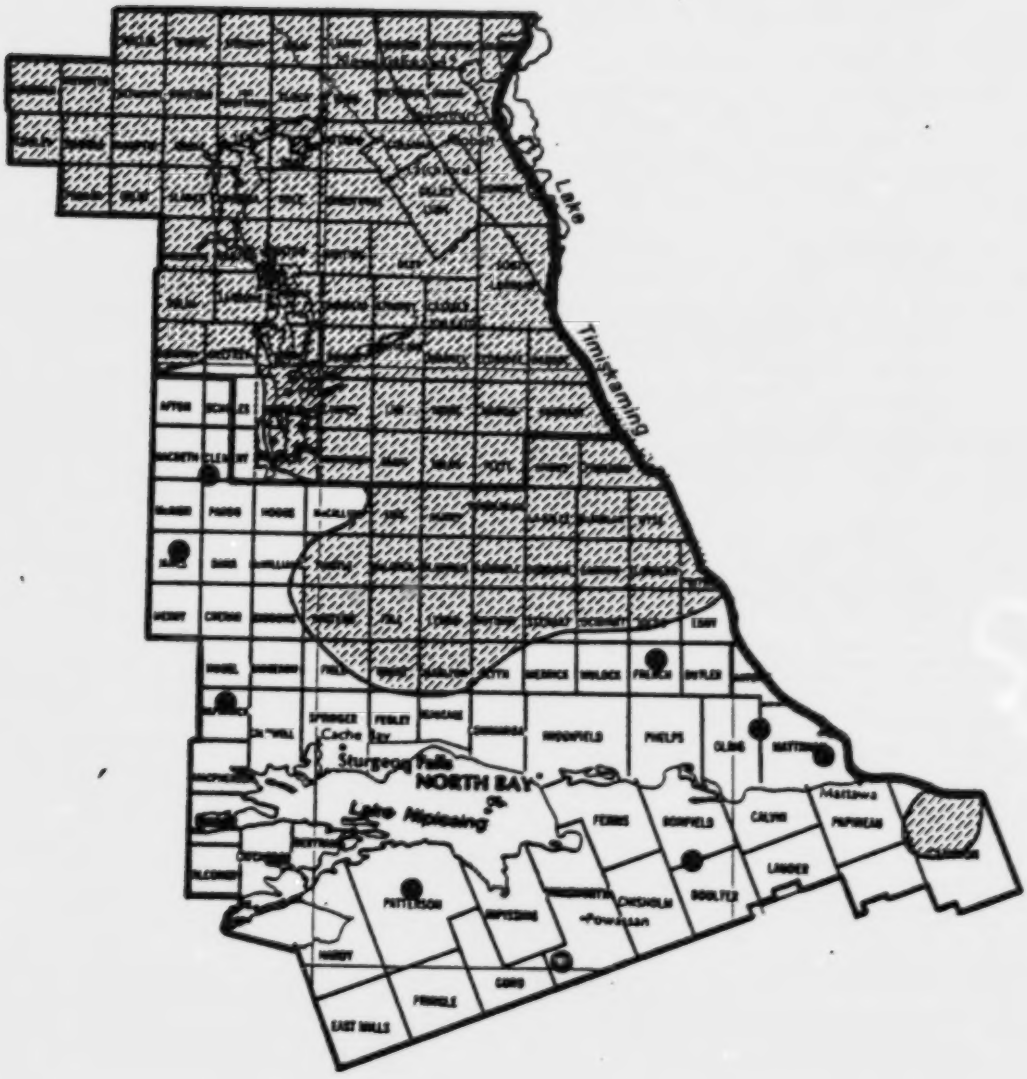
Spruce Budworm

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometers 20 10 0 30

Spruce Budworm

Areas within which whole-tree and top mortality occurred in 1980

LEGEND

Mortality ● or ▨

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): jP [Major]

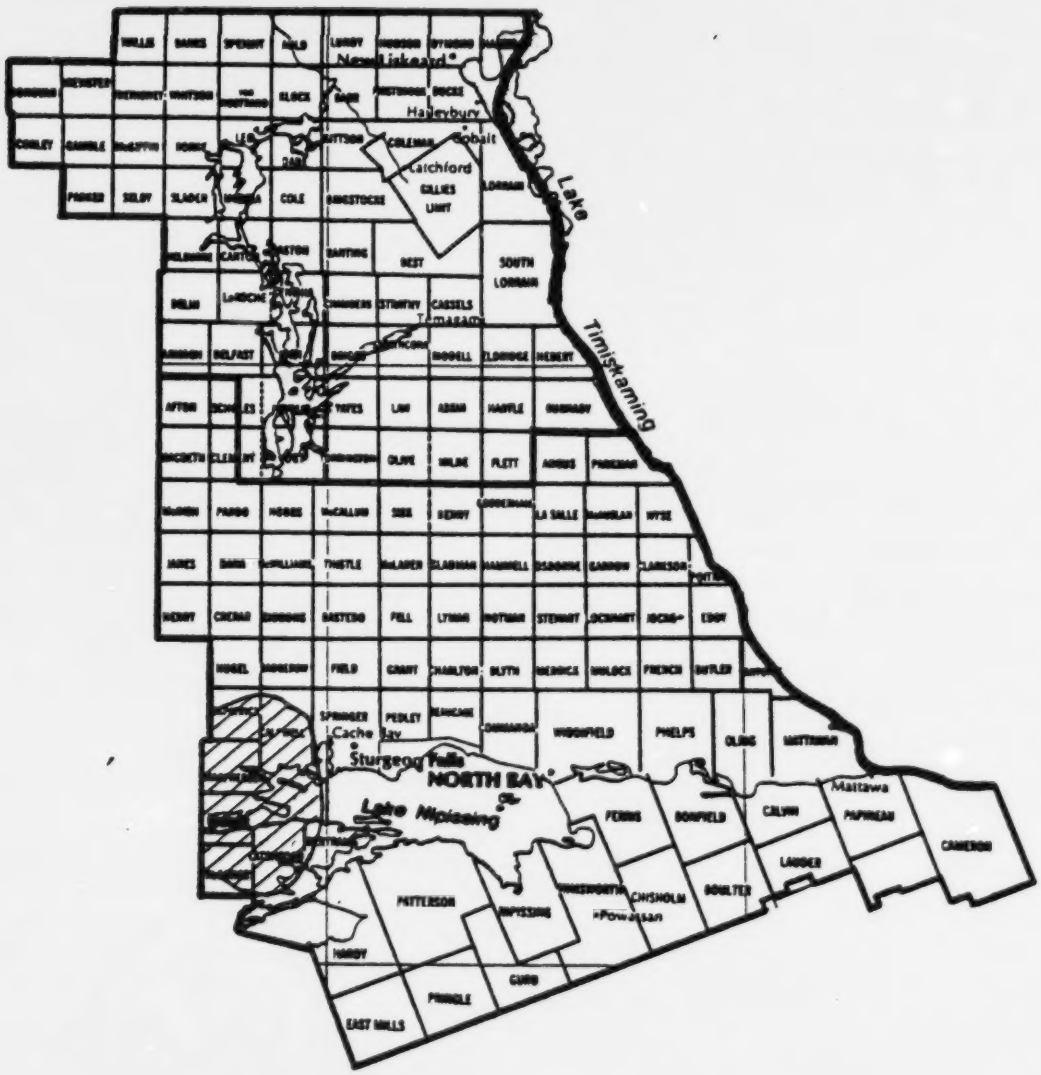
Year	Remarks
1950-1964	not reported
1965-1966	Groups of lightly infested trees were observed in Badgerow, Hugel and Kirkpatrick twps and small numbers of larvae were found in jack pine stands at numerous points elsewhere in the district.
1967	An appreciable increase in the population of this insect was evident when heavy defoliation was found on host trees growing on high, rocky sites at several locations in the southwestern part of the district. Light damage occurred in many stands in this area as well (see map, page 41).
1968	Although little change in the jack pine budworm population could be determined over the previous year, an increase in the area of light infestation occurred in the southwestern part of the district (see map, page 42).
1969	Although the area infested by the jack pine budworm decreased in the southwestern part of the district, a marked increase in the intensity of the population occurred and caused moderate-to-severe defoliation through the affected area (see map, page 43).
1970	High populations persisted and caused moderate-to-severe defoliation in numerous stands in the southwestern part of the district (see map, page 44). Pockets of light infestation were found in Kirkpatrick and Falconer twps.
1971	Although the population of this insect was not as intense as in 1970, moderate-to-severe defoliation recurred at several locations in the southwestern part of the district (see map, page 45). Persistent infestations of this insect since 1967 have caused considerable tree mortality and top-killing of host trees in the infested area.
1972	Infestations of this insect, which have persisted for five consecutive years, declined sharply in 1972 and little current defoliation was evident.

(cont'd)

Jack Pine Budworm, *Choristoneura pinus pinus* Free. (concl.)

Year	Remarks
1973	The downward trend in the population of this budworm continued and only small numbers of larvae could be found.
1974	Small numbers of larvae were observed at widely separated points.
1975-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

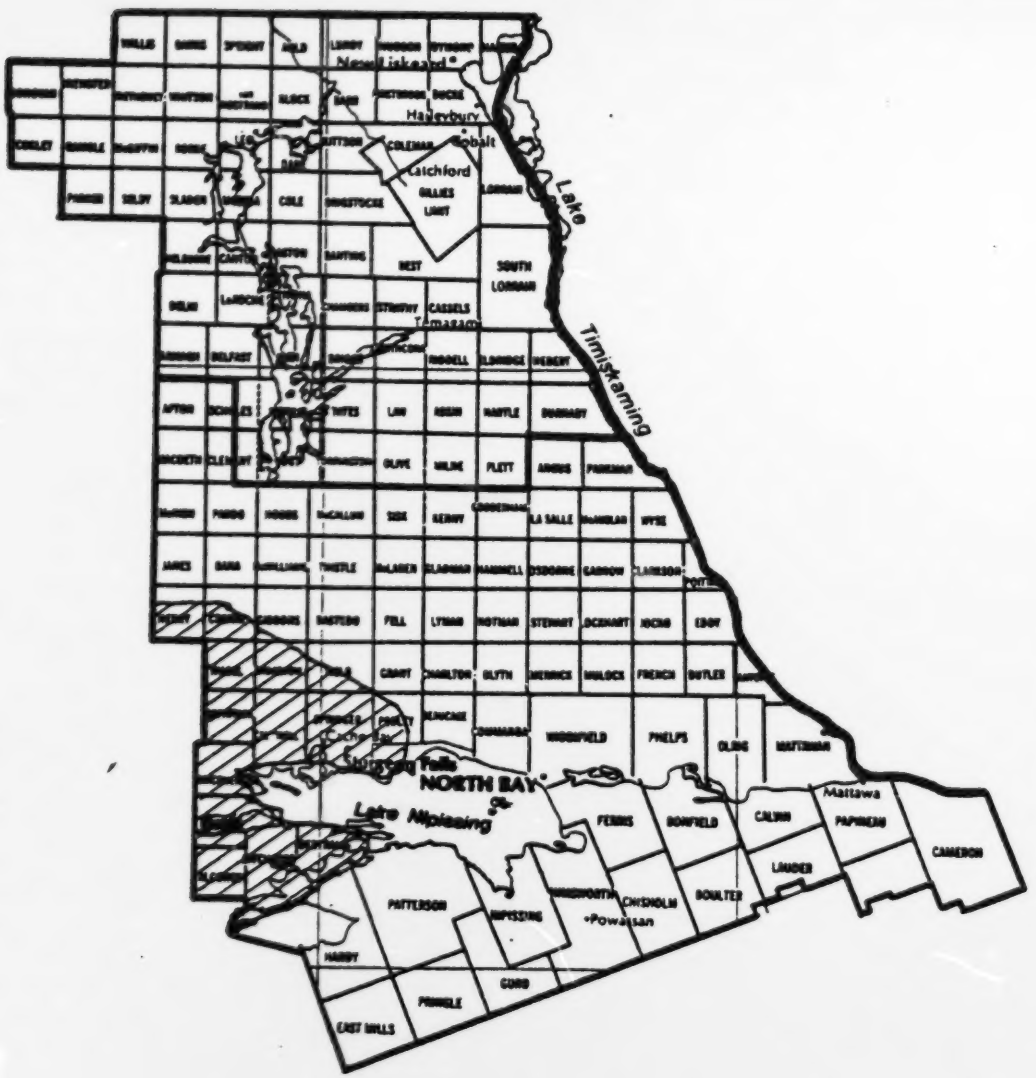
Jack Pine Budworm

Areas within which defoliation occurred in 1967

LEGEND

Light defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

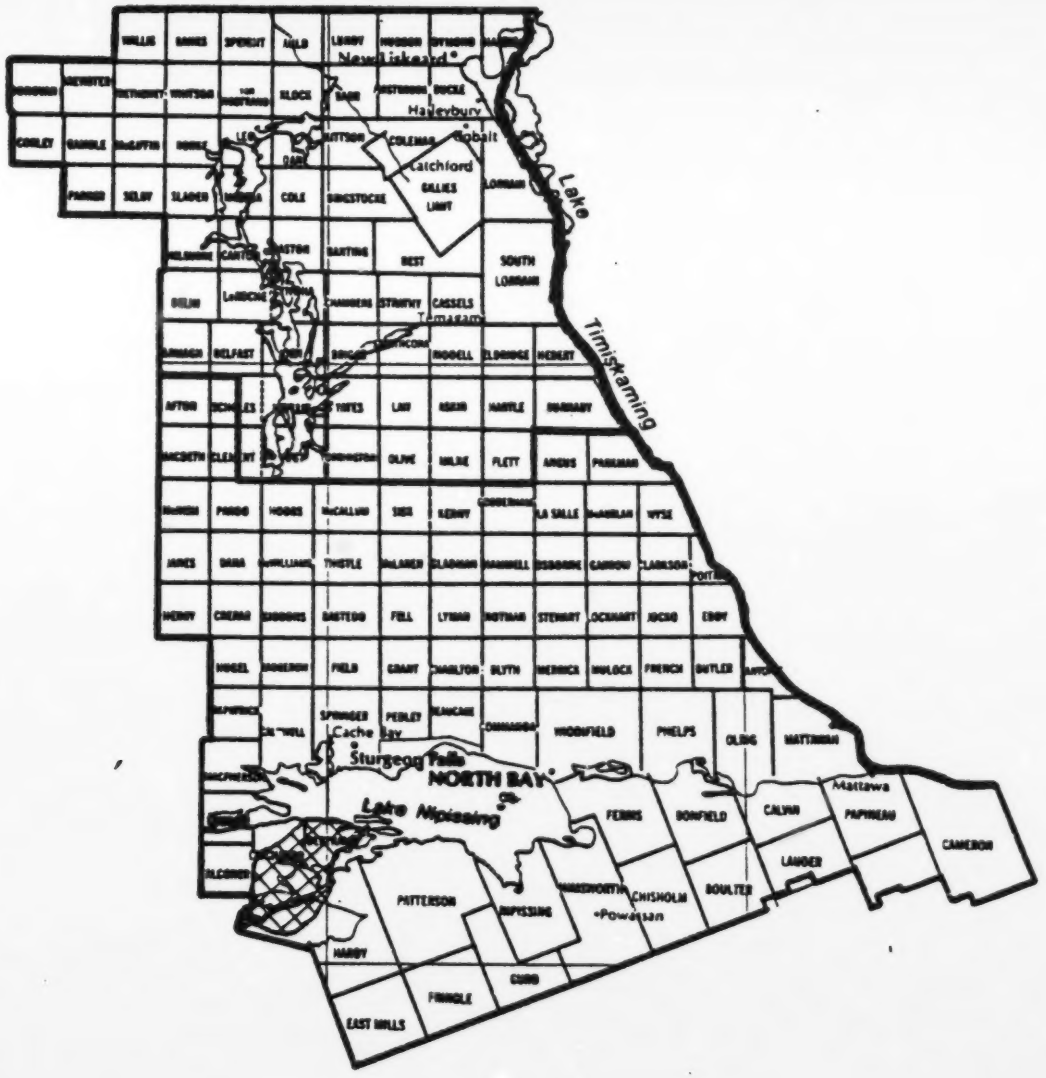
Jack Pine Budworm

Areas within which defoliation occurred in 1968

LEGEND

Light defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Jack Pine Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Jack Pine Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Jack Pine Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation

Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): larch [Major]

Year	Remarks
1950	Small numbers were observed in all larch stands examined.
1951-1952	not reported
1953	Small numbers were observed at widely separated points.
1954	not reported
1955	A trace population was observed in Loudon Twp.
1956	Populations remained at a low ebb; few larvae could be found.
1957-1961	Small numbers of larvae were observed in numerous stands throughout the district.
1962	A slight increase in the population of this insect occurred in many stands in the district.
1963	A light infestation occurred in a large stand of tamarack in Beaucage Twp. Small numbers were observed at several other locations.
1964	Minor increases in the population of this insect were evident in several stands except in Beaucage Twp, where a decline in numbers was recorded.
1965	Populations continued to decline; only small numbers were observed at widely separated locations.
1966	Little change in the population of this insect could be determined.
1967-1969	Only small numbers could be found.
1970	not reported
1971	Small numbers were observed at numerous locations.
1972	Populations increased and caused moderate-to-severe defoliation at scattered locations in the northern part of the district.

(cont'd)

Larch Casebearer, *Coleophora laricella* (Hbn.) (concl.)

Year	Remarks
1973	The population of this insect increased in the southern part of the district. Light defoliation was observed at numerous locations.
1974-1978	not reported
1979	Populations were observed at trace-to-low intensity at widely separated locations.
1980	not reported

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.)

Host(s): maple [Major]

Year	Remarks
1950	A light infestation occurred on red maple in Scholes and Clement twps.
1951	No change in populations of this insect occurred. Defoliation was light wherever populations were found.
1952	The population density of this insect increased. Moderate-to-severe defoliation was observed on red maple in nine townships (see map, page 50).
1953	High populations caused moderate-to-severe defoliation of maple stands at several points in the district, especially in the southeastern part. Occasional pockets of light damage were found as well (see map, page 51).
1954	A marked decline in the population of this insect was evident when moderate-to-severe defoliation was confined to pockets in three townships. Light defoliation was observed at seven locations elsewhere (see map, page 52).
1955	Populations increased and caused moderate-to-severe defoliation in red maple stands in four townships in the central and northwestern part of the district. Light damage was observed at scattered locations elsewhere (see map, page 53). (cont'd)

Greenstriped Mapleworm, *Dryocampa rubicunda* (Fabr.)(cont'd)

Year	Remarks
1956	Populations increased for the second consecutive year. Moderate-to-severe defoliation of red maple stands was observed in six townships and light damage was evident at several other locations (see map, page 54).
1957	A decrease in numbers of this insect occurred. Moderate-to-severe defoliation was confined to maple stands in two townships. Small areas of light damage were observed at scattered points elsewhere (see map, page 55).
1958	The decline in population levels of this insect reported in 1957 continued in 1958. Small numbers were observed at only one point.
1959	not reported
1960	Small numbers of larvae were found in red maple stands in Notman and Lyman twps.
1961-1969	not reported
1970	A pronounced increase in the population of this insect occurred. Light defoliation was evident in numerous red maple stands in the northern part of the district.
1971	Populations increased for the second consecutive year and caused moderate-to-severe defoliation of red maple and sugar maple stands in several townships in the north-eastern part of the district (see map, page 56).
1972	Defoliation by the mapleworm continued to increase in extent and intensity. Two separate infestations caused moderate-to-severe defoliation of host trees in the southern and eastern parts of the district (see map, page 57).
1973	This insect continued to cause severe damage. Moderate-to-severe defoliation of red maple and sugar maple was mapped at three locations. The largest infestation and most extensive damage occurred in parts of Blyth, Notman, Stewart and Merrick twps (see map, page 58). Appreciable mortality of red maple was evident at one point in Merrick Twp.

(cont'd)

Greenstriped Mapleworm, *Dryocampa rubicunda* (Fabr.) (concl.)

Year	Remarks
1974	Populations of this insect caused moderate-to-severe defoliation of red maple and sugar maple stands at several points in the eastern half of the district (see map, page 59).
1975	Heavy infestations recurred in McCallum and Cameron twps. New pockets of moderate-to-severe damage were also found in Dana and Boyd twps.
1976	Populations declined to low numbers at scattered locations.
1977	Light defoliation was observed in Cameron and Stewart twps.
1978	Low populations persisted in Cameron Twp.
1979-1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Greenstriped Mapleworm

Areas within which defoliation occurred in 1952

LEGEND

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS

Greenstriped Mapleworm

Areas within which defoliation occurred in 1953

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS

Greenstriped Mapleworm

Areas within which defoliation occurred in 1954

LEGEND

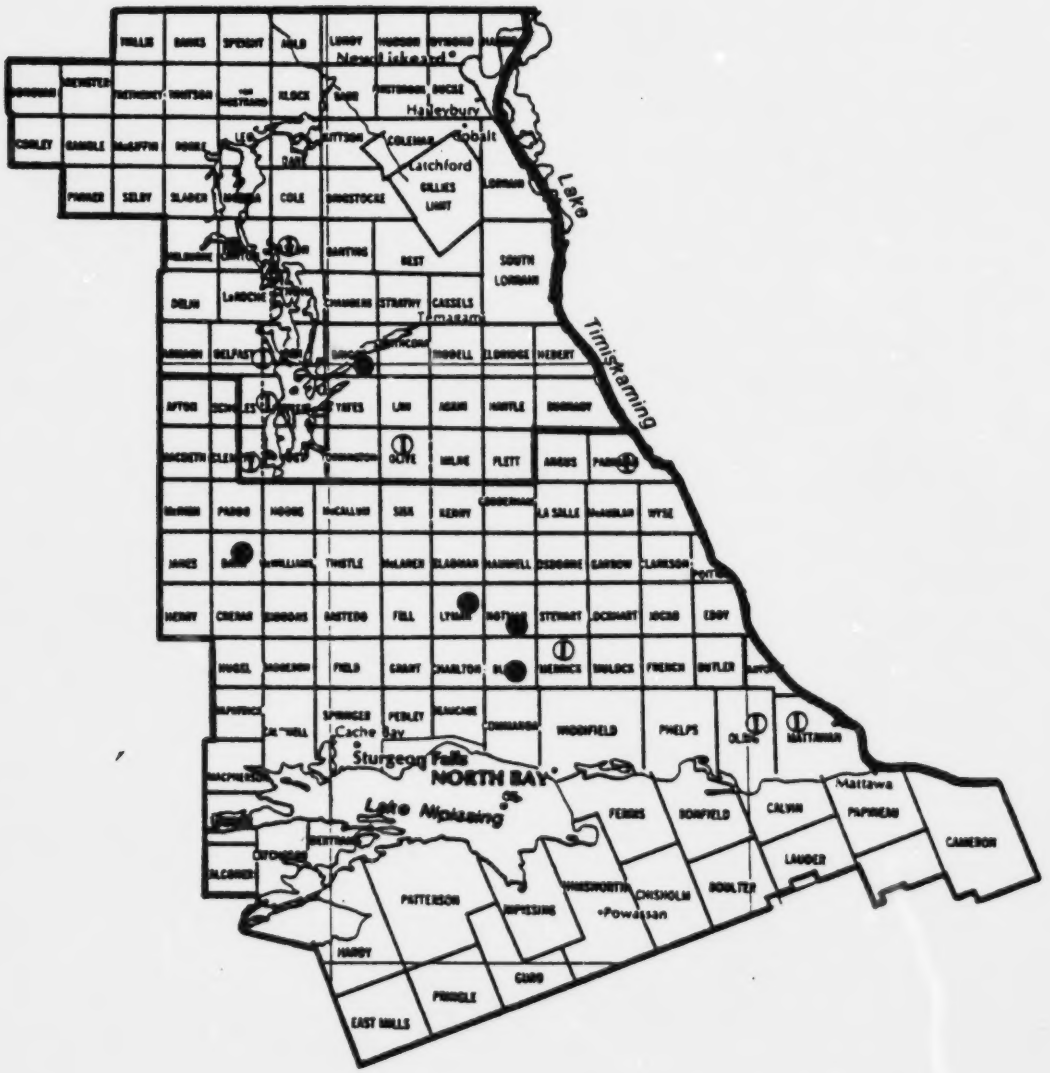
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometers 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Greenstriped Mapleworm

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS

Greenstriped Mapleworm

Areas within which defoliation occurred in 1956

LEGEND

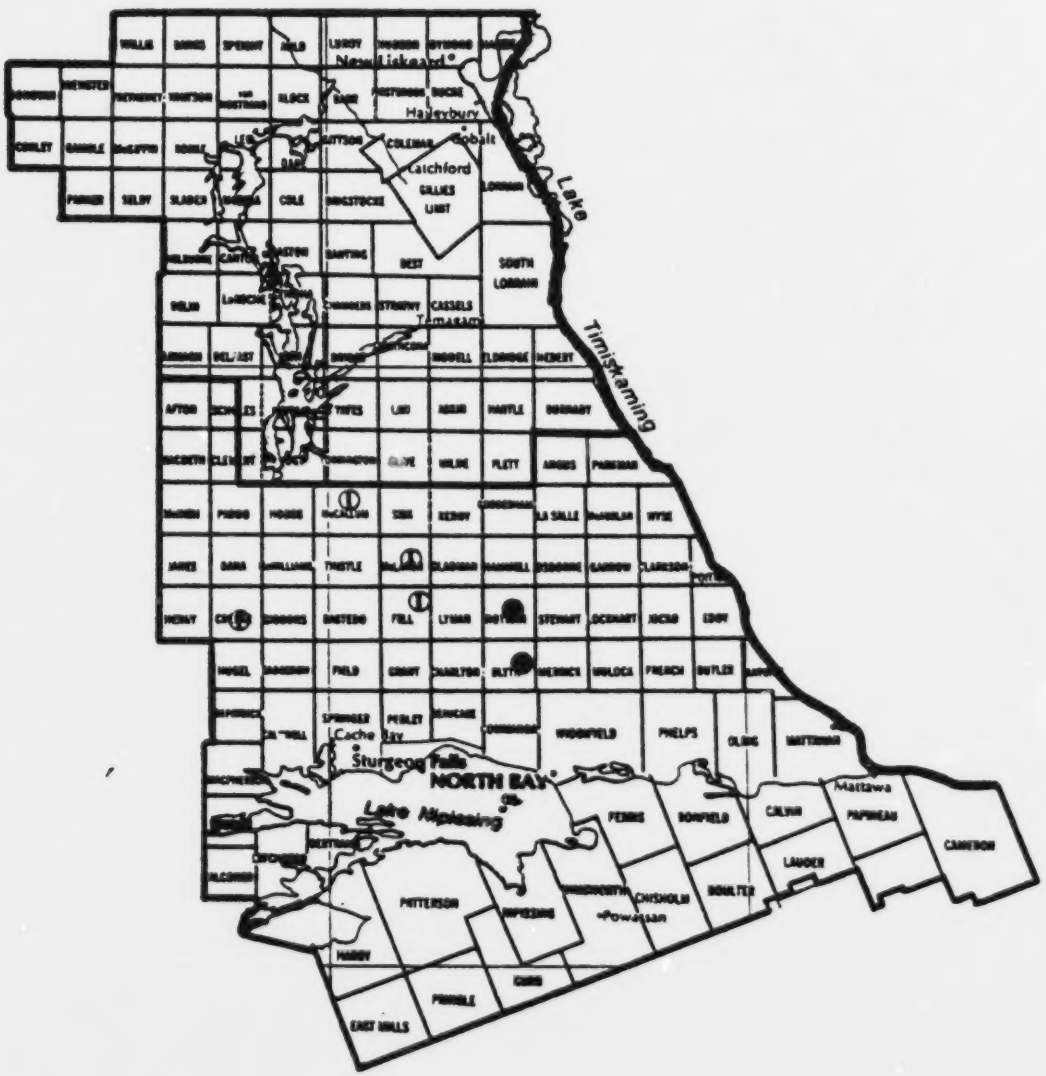
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Greenstriped Mapleworm

Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

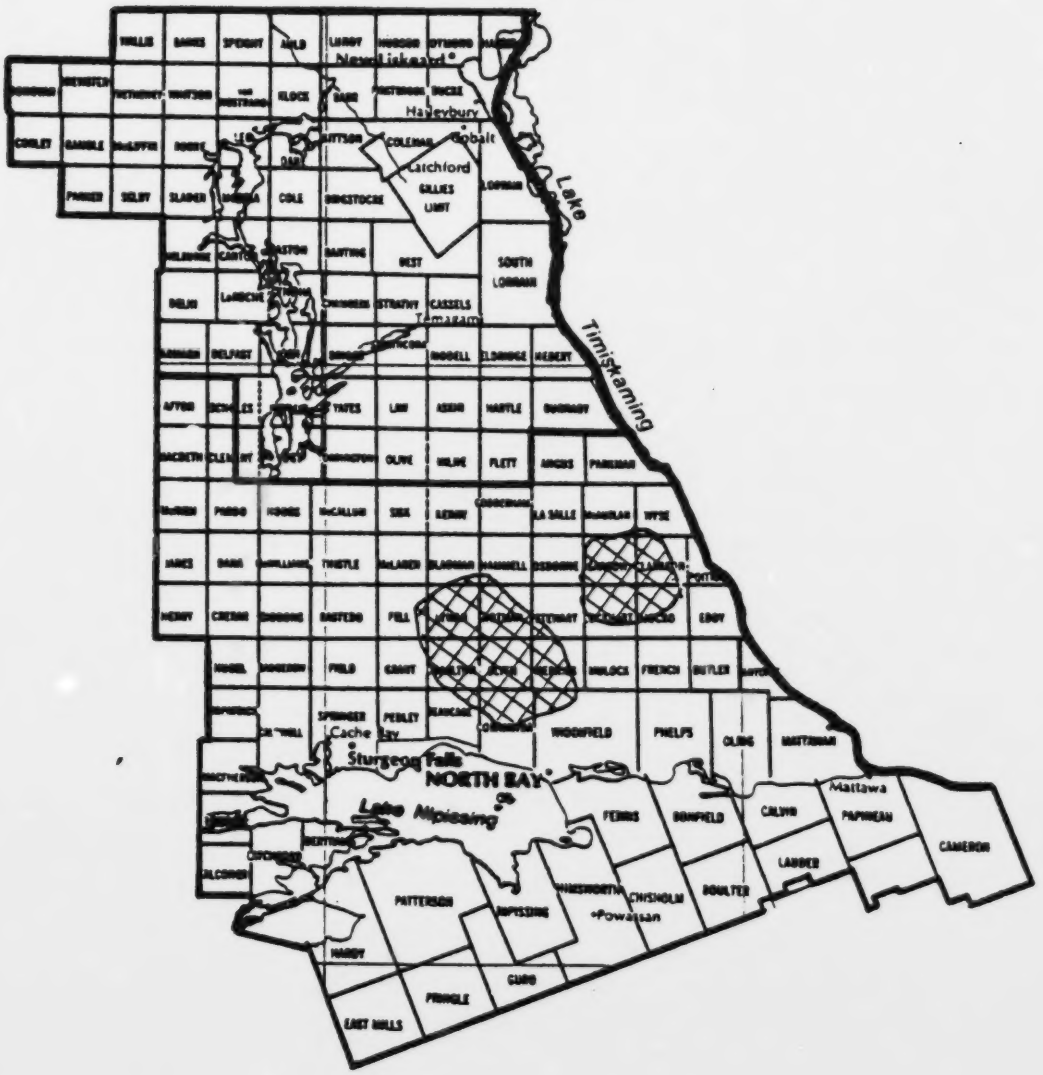
Greenstriped Mapleworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Greenstriped Mapleworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Greenstriped Mapleworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Greenstriped Mapleworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.)

Host(s): poplar [Major]

Year	Remarks
1950-1958	not reported
1959	Small numbers were collected at one location.
1960	low populations in numerous aspen stands
1961	Populations increased. Light defoliation was recorded in 13 townships.
1962	Pockets of light-to-medium infestation were observed at many locations in the district.
1963	Populations increased and caused moderate-to-severe defoliation in aspen stands in Field and Crerar twps and in the vicinity of North Bay. Numerous pockets of light infestation were observed through the remainder of the district.
1964	A marked decline in populations of this insect occurred. Defoliation was negligible.
1965-1968	not reported
1969	Sharp increases in populations were evident when moderate-to-severe defoliation was observed in the Field-River Valley area and in Bonfield, Calvin and Papineau twps. Light defoliation occurred at numerous locations elsewhere in the district.
1970	High populations recurred in aspen stands at numerous points in the district.
1971	Pockets of medium-to-heavy infestation of this insect were common throughout the district. In most instances, severe defoliation was confined to the upper third of the crowns of host trees.
1972	Populations declined sharply; only small numbers were found.
1973	Small numbers were observed at widely separated points.
1974-1980	not reported.

American Aspen Beetle, *Gonioctena americana* (Schaef.)

Host(s): poplar [Major]

Year	Remarks
1950	not reported
1951	High populations occurred on fringes of aspen stands at several points in Parkman, McAuslan and LaSalle twps.
1952	A decline in populations occurred; only small numbers could be found.
1953	Populations remained low; few insects were observed.
1954	not reported
1955	Low populations were found in Papineau Twp.
1956	Trace populations were observed at widely separated points.
1957	Populations remained low.
1958	not reported
1959-1961	Pockets of light infestation were observed in the northern part of the district.
1962	Populations increased and caused moderate-to-severe defoliation on small groups of immature aspens at scattered points.
1963-1966	Light infestations were observed on reproduction at several points in the northern part of the district.
1967-1969	not reported
1970-1971	Moderate-to-severe defoliation occurred on small groups of reproduction at several locations in the northern part of the district.
1972	not reported
1973	Light defoliation caused by this insect was observed at several locations in the southeastern part of the district.

(cont'd)

American Aspen Beetle, *Gonioctena americana* (Schaef.) (concl.)

Year	Remarks
1974	Small numbers were observed at widely separated locations.
1975	Moderate-to-severe defoliation caused by this insect was observed on small groups of aspen in LaSalle and Sisk twps. Light defoliation was evident at several other locations.
1976	not reported
1977	Light defoliation was observed in Indian Reserve No. 10 and in Badgerow Twp.
1978	Populations declined to a low ebb.
1979-1980	not reported

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): deciduous [Major]

Year	Remarks
1950	High populations of this caterpillar caused moderate-to-severe defoliation of host trees through approximately 5,100 ha of forested land in the southern part of the district. Small pockets of medium-to-heavy infestation were detected in Kirkpatrick, Badgerow, Poitras and Papineau twps and light damage was evident at scattered points elsewhere (see map, page 65).
1951	Heavy infestations persisted and caused moderate-to-severe defoliation through approximately 21,000 ha of forested land. The main body of infestation occurred in the southern half of the district; however, several small pockets of infestation were observed at scattered locations in the northern half as well (see map, page 66).
1952	High populations recurred and the area of infestation expanded considerably for the second consecutive year. Moderate-to-severe defoliation was mapped through the southern three-quarters of the district (see map, page 67).

(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (cont'd)

Year	Remarks
1953	Susceptible forest stands throughout the entire district were infested by caterpillars. Moderate-to-severe defoliation was evident through the southwestern part of the district and elsewhere the defoliation was light (see map, page 68).
1954	A marked decrease in the population of this insect was evident when moderate-to-severe defoliation was confined to the southwestern part of the district (see map, page 69).
1955	Populations declined for the second consecutive year, leaving a small area of light infestation confined to the southwestern part of the district (see map, page 70).
1956	Populations declined to reach a low ebb; defoliation was negligible.
1957-1960	not reported
1961	Small numbers of larvae were observed at one point in Thistle Twp.
1962	Populations increased and caused light defoliation on aspens in the southwestern part of the district. Scattered colonies of the caterpillar were observed at numerous points elsewhere.
1963	Populations increased for the second consecutive year and caused moderate-to-severe defoliation in small areas in Loudon, MacPherson and Caldwell twps (see map, page 71).
1964	A significant increase in the extent and intensity of the forest tent caterpillar infestation was evident in the southwestern part of the district (see map, page 72).
1965	The forest tent caterpillar infestation increased in extent in the southwestern part of the district. A new medium-to-heavy infestation occurred in the city of North Bay and adjacent urban areas in Widdifield, West Ferris and East Ferris twps (see map, page 73).
1966	The area of infestation increased for the fourth consecutive year (see map, page 74).

(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (cont'd)

Year	Remarks
1967	The major part of the infestation subsided; moderate-to-severe defoliation was confined to a small area in the vicinity of the city of North Bay (see map, page 75).
1968	Populations decreased to a low level; only small numbers of caterpillars were observed.
1969-1971	not reported
1972	Small numbers of larvae were observed in Badgerow Twp.
1973	Populations increased and caused moderate-to-severe defoliation of aspen stands in the area surrounding the city of North Bay. Small areas of medium-to-heavy infestation were also observed in the southwestern part of the district (see map, page 76).
1974	The area of medium-to-heavy infestation increased in the southwestern part of the district and small pockets occurred along the north shore of Lake Nipissing and at one point east of the city of North Bay (see map, page 77).
1975	Medium-to-heavy infestations of this caterpillar persisted and spread to infest approximately half of the district (see map, page 78).
1976	Although the caterpillar infestation subsided north of Lake Nipissing in the western part of the district, a major extension occurred in the southern and eastern parts (see map, page 79).
1977	Little change occurred in the area of medium-to-heavy infestation over the previous year (see map, page 80).
1978	There was a marked decrease in the population of the caterpillar; however, areas of moderate-to-severe defoliation were observed at four locations (see map, page 81).
1979	Populations of this caterpillar declined to an endemic level.
1980	Populations increased and caused moderate-to-severe defoliation through parts of four townships on the northwest side of Lake Nipissing (see map, page 82).

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar

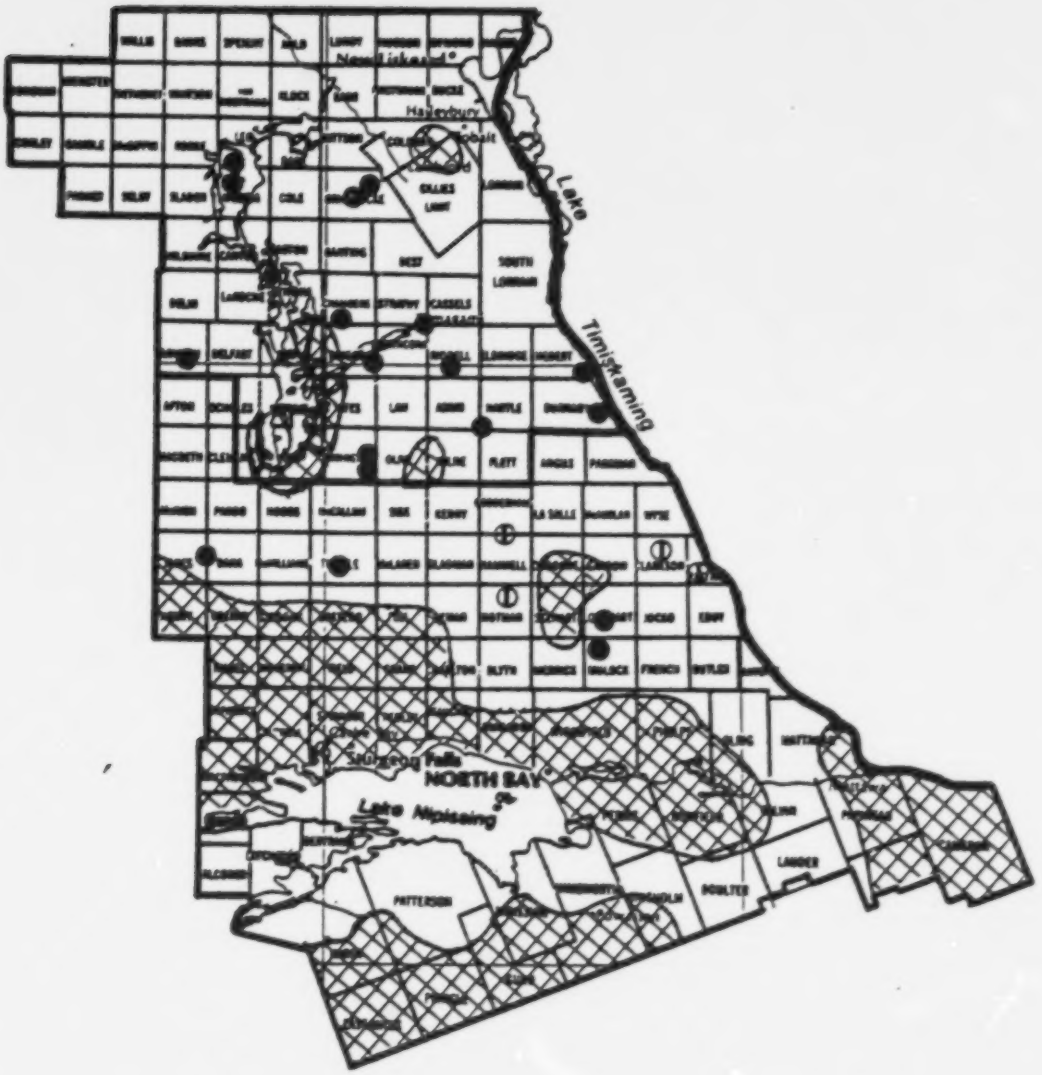
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometers 20 10 0 20

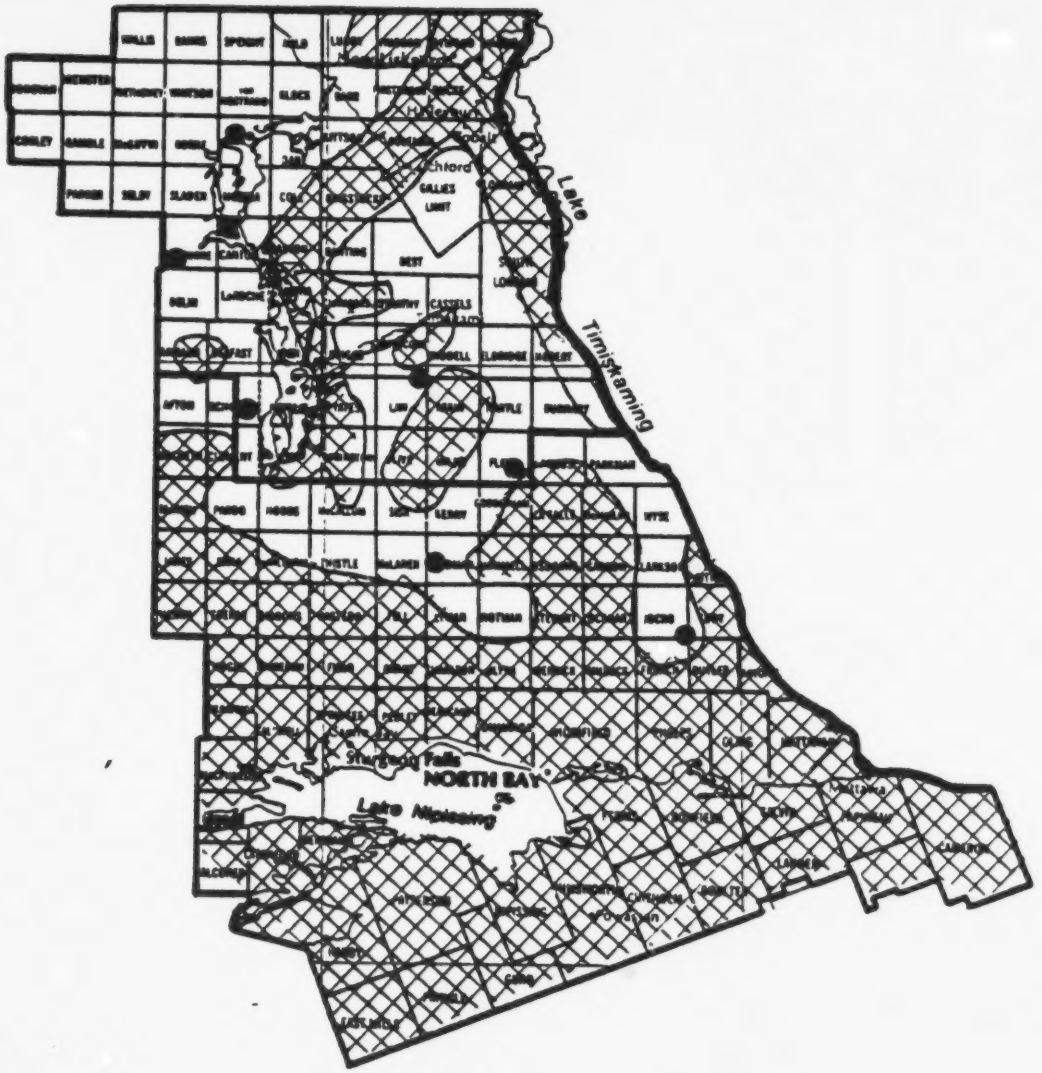
Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

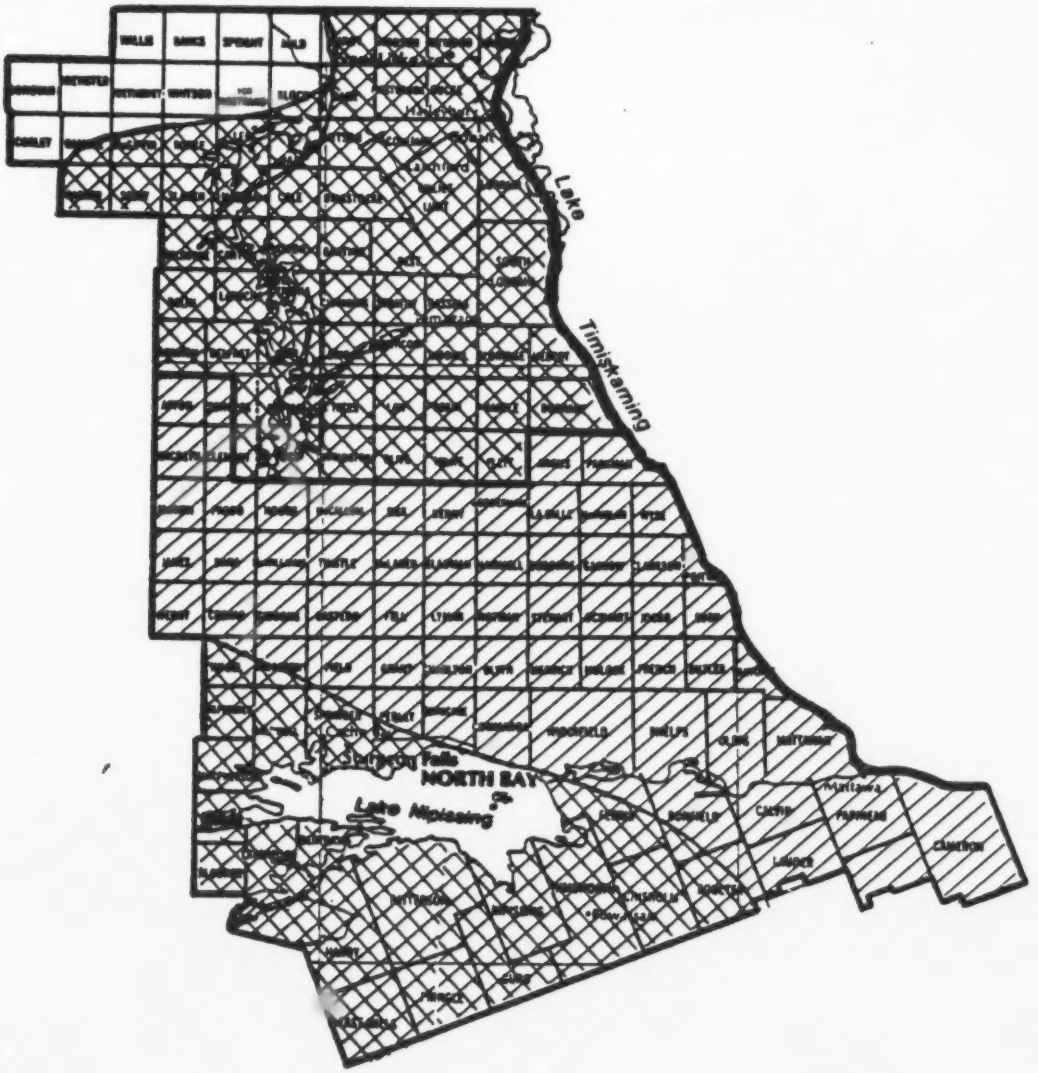
Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

LEGEND

Moderate-to-severe defoliation ● or ▨

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

LEGEND

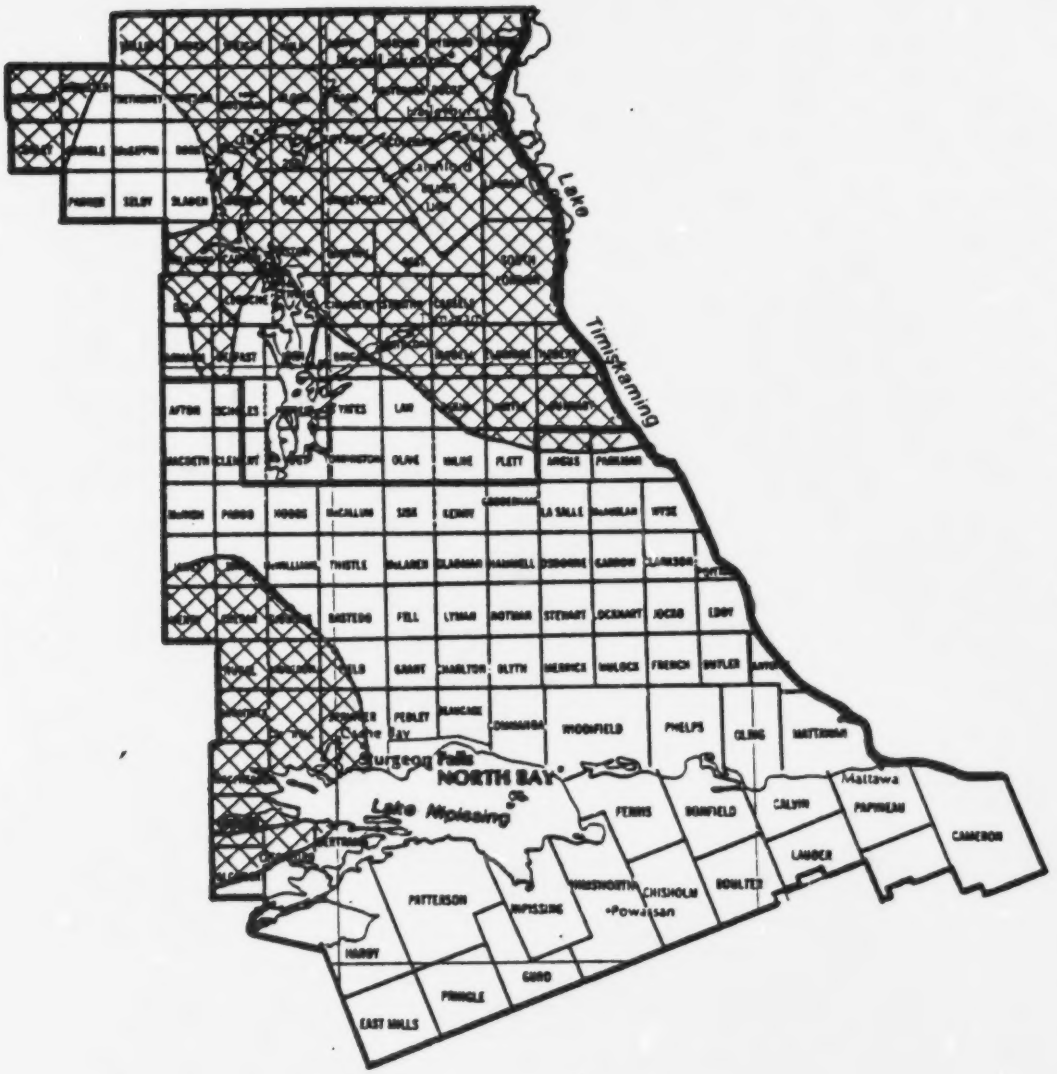
Light defoliation ◐ or

Moderate-to-severe defoliation ● or

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

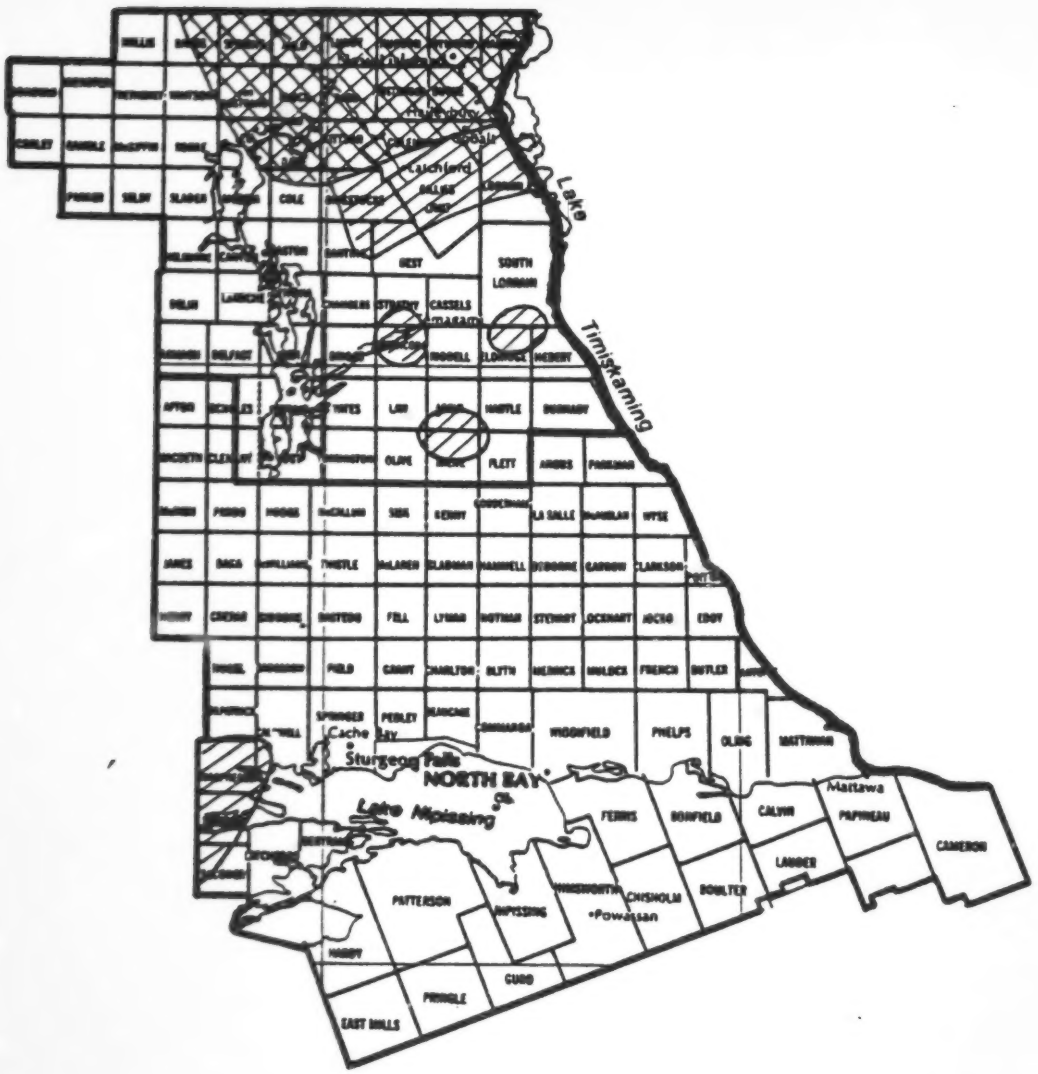
Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1955

LEGEND

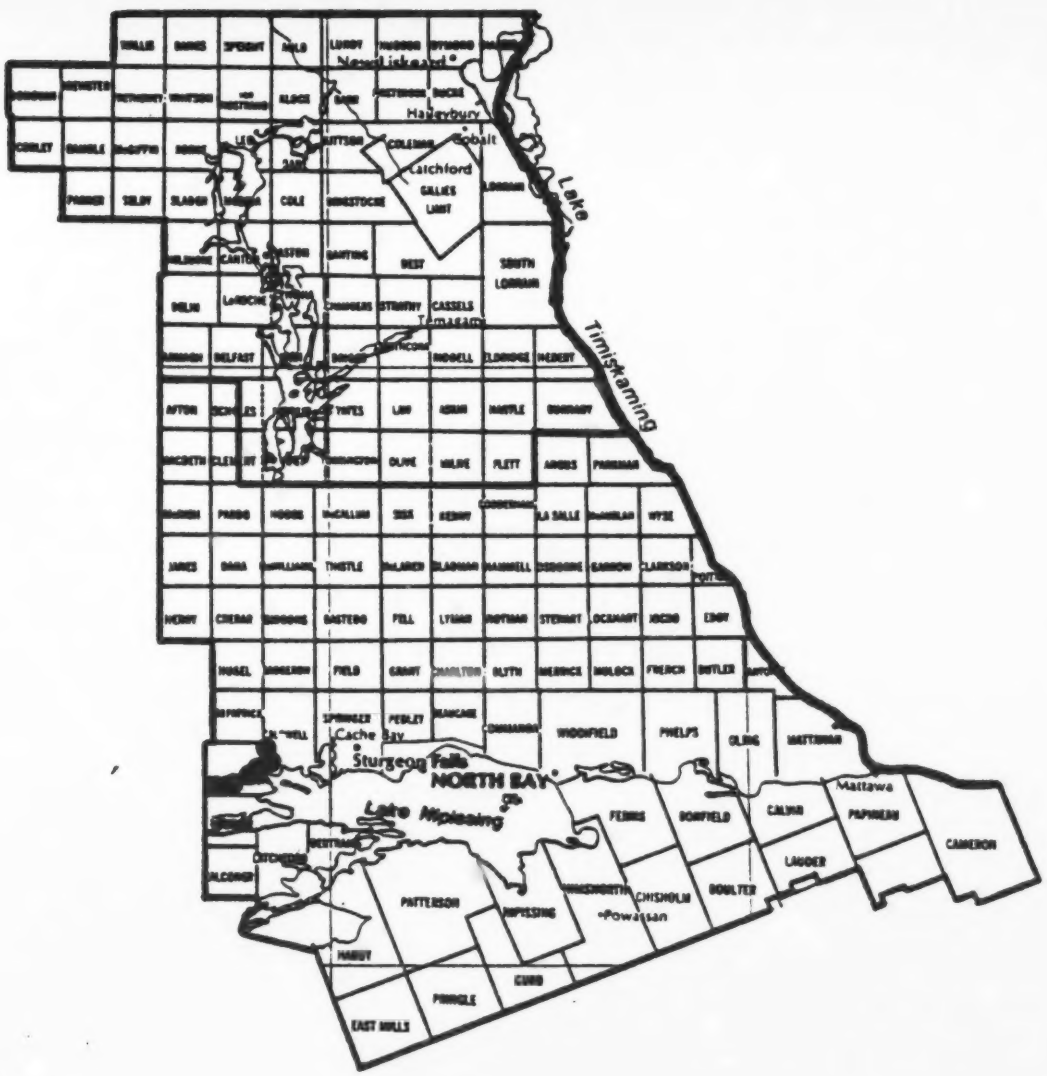
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1963

LEGEND

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS

Forest Tent Caterpillar

Areas within which defoliation occurred in 1964

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Forest Tent Caterpillar

Areas within which defoliation occurred in 1965

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar

Areas within which defoliation occurred in 1966

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

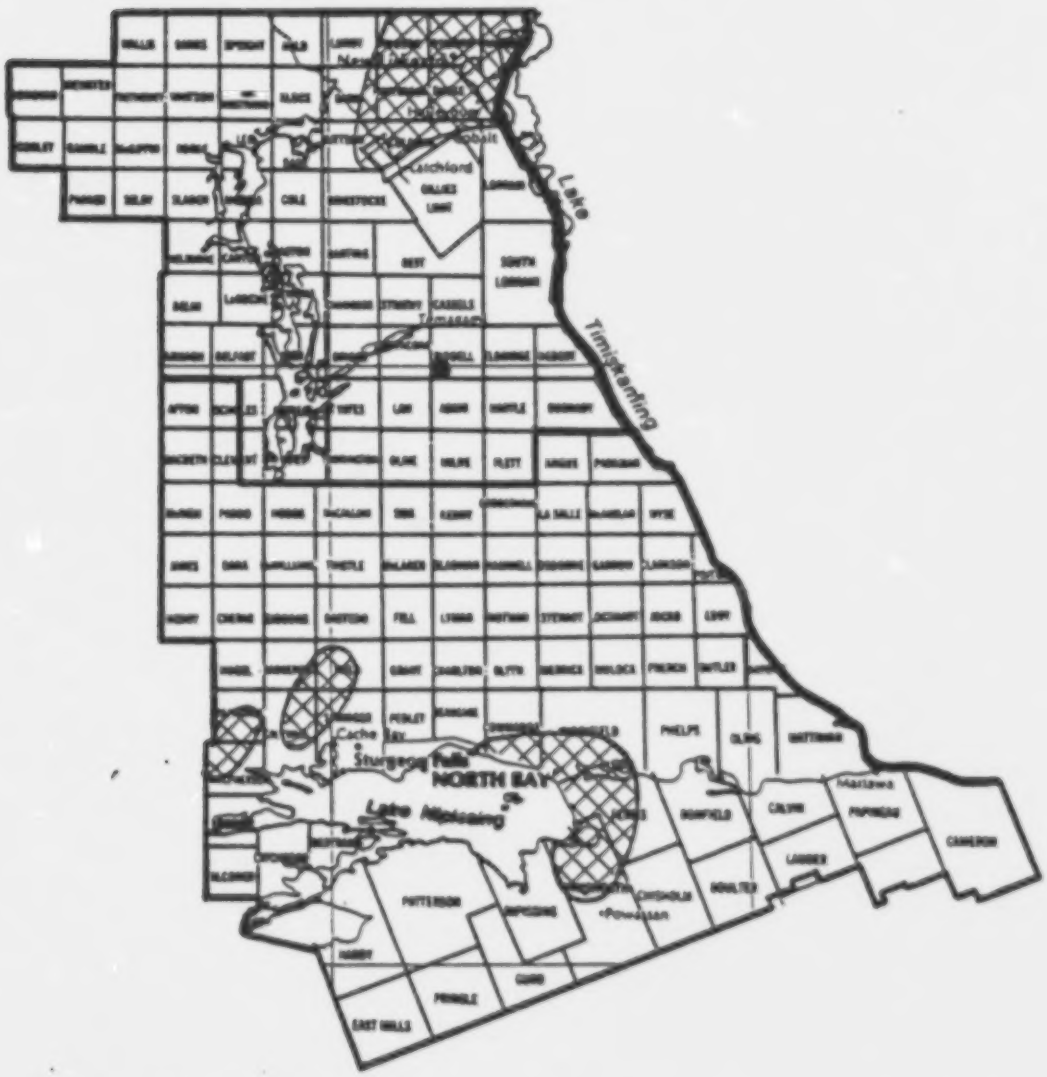
Forest Tent Caterpillar

Areas within which defoliation occurred in 1967

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

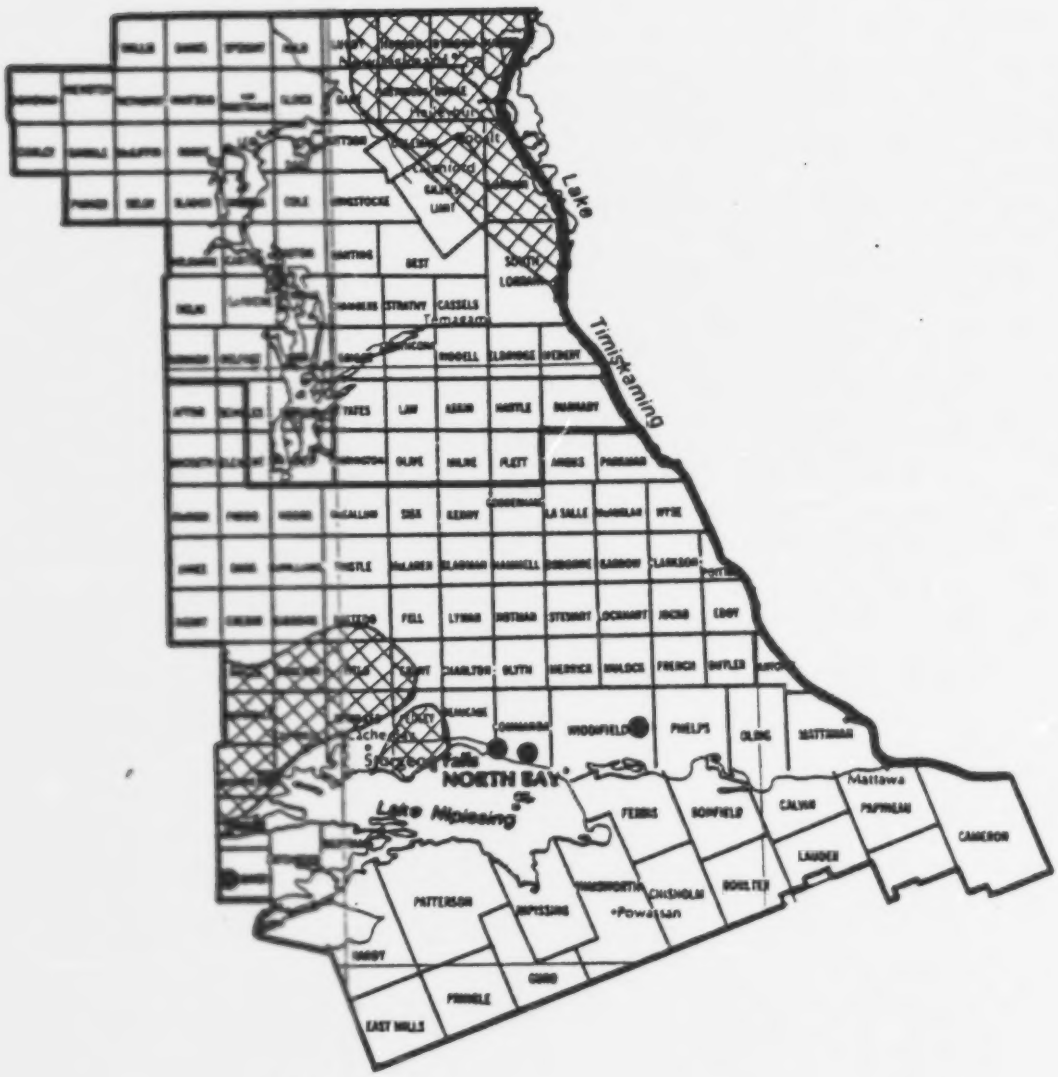
Areas within which defoliation occurred in 1973

Scale

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

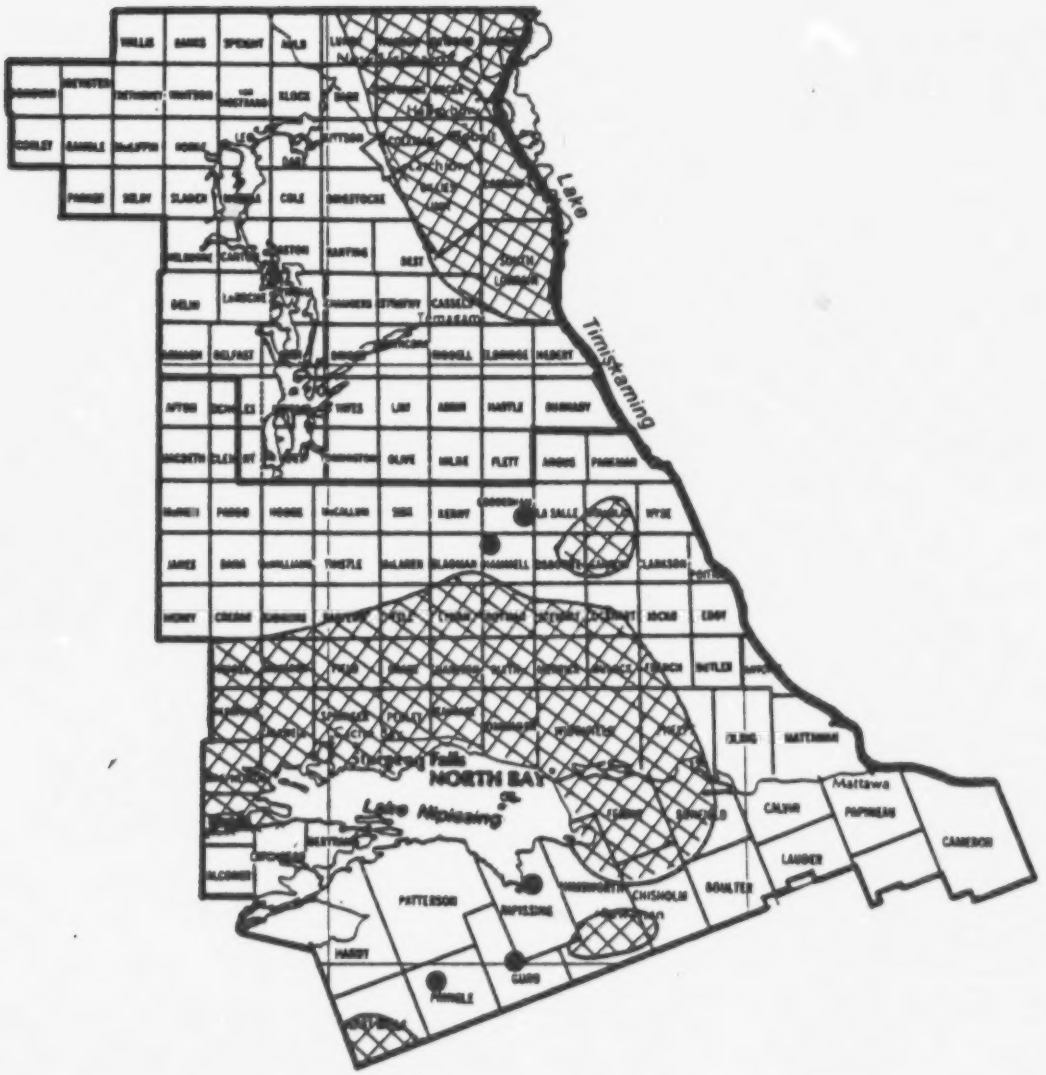
Forest Tent Caterpillar

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or

TEMAGAMI AND NORTH BAY DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS

Forest Tent Caterpillar

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS

Forest Tent Caterpillar

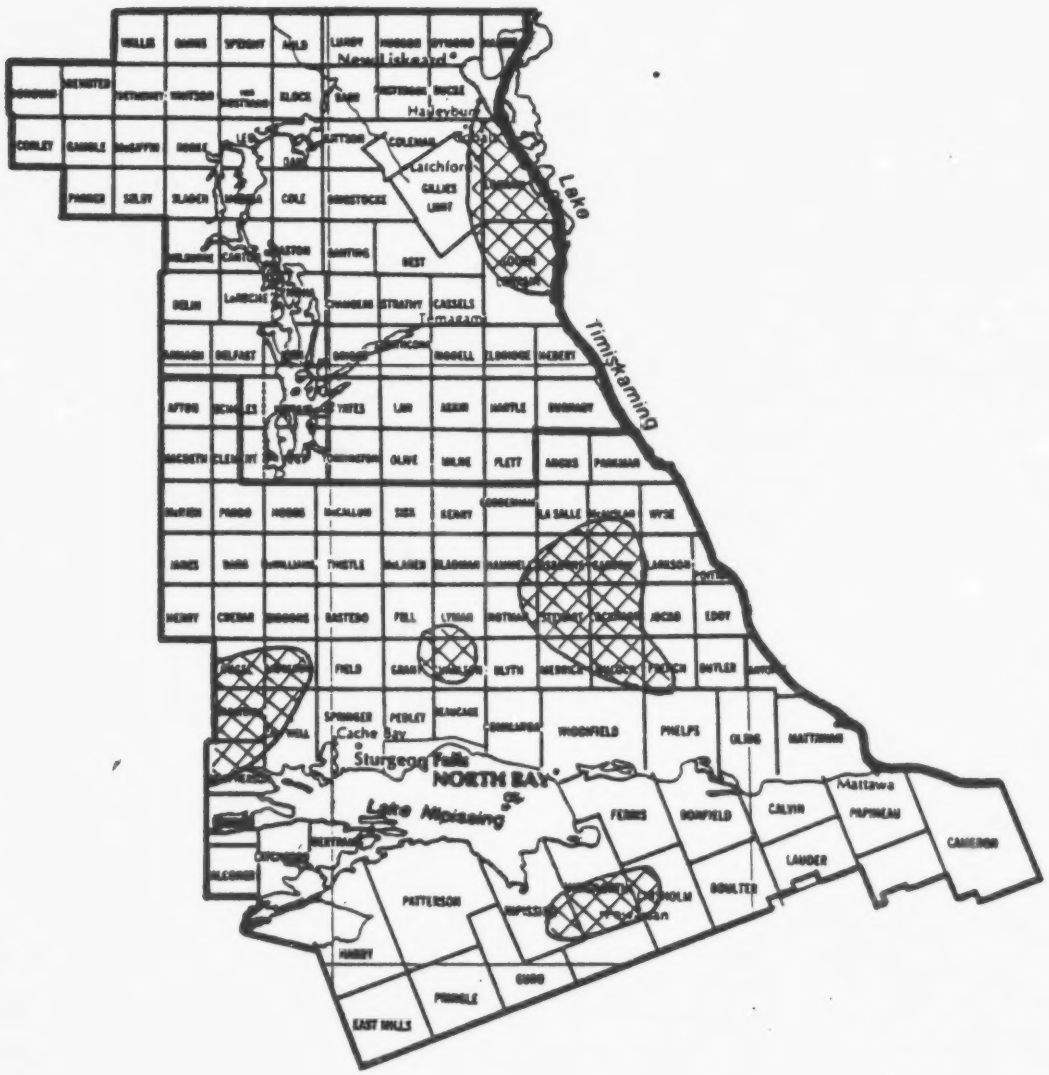
Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or

Scale

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation

TEMAGAMI AND NORTH BAY DISTRICTS

Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation

Balsam-fir Sawfly, *Neodiprion abietis* complex

Host(s): bF, spruce [Major]

Year	Remarks
1950-1951	not reported
1952	Heavy infestations of this sawfly caused moderate-to-severe defoliation of the upper crowns of host trees in the vicinity of North Bay.
1953	Moderate-to-severe defoliation of balsam-fir was observed in Notman, Blyth, Jocko and Poitras twps in the eastern part of the district. Light damage was observed at scattered points elsewhere.
1954	A decrease in the population of this sawfly was evident when defoliation was confined to the top parts of small numbers of trees at scattered locations.
1955	Populations of this sawfly declined for the second consecutive year. No appreciable defoliation was observed.
1956	not reported
1957	Populations increased; small numbers of colonies were observed at numerous locations in the district.
1958-1961	not reported
1962-1964	small numbers of larvae collected in French Twp.
1965	not reported
1966-1967	Small pockets of light infestation were observed in Papineau, Lauder, Calvin and Badgerow twps.
1968	Populations of this sawfly increased and caused moderate-to-severe defoliation in Calvin, Papineau and Mattawan twps.
1969-1970	Medium-to-heavy infestations recurred in Calvin, Papineau and Mattawan twps.
1971	A marked decline in populations occurred. Damage was confined to North Himsworth and South Himsworth twps, where small pockets of light defoliation were observed.

(cont'd)

Balsam-fir Sawfly, *Neodiprion abietis* complex (concl.)

Year	Remarks
1972	Populations declined for the second consecutive year; only small numbers of colonies were found in North Himsworth and South Himsworth twps where light infestations occurred the previous year.
1973-1974	not reported
1975	Populations increased markedly and caused moderate-to-severe defoliation on the upper crowns of host trees along the north shore of Lake Nipissing and at scattered points in Field, Grant, Charlton and Blyth twps. Light-to-moderate damage was evident in several townships south of Lake Nipissing.
1976	Little change in the population intensity of this sawfly could be determined; however, an increase in the area of infestation was evident when pockets of heavy infestation were found in Papineau, Calvin, West Ferris, Commanda, Beaucage and Pedley twps. Pockets of light-to-moderate defoliation were found in Lyman, North Himsworth, Nipissing and Gurd twps.
1977	Moderate-to-severe defoliation recurred in Papineau, Calvin, West Ferris, Commanda, Beaucage and Pedley twps and in Indian Reserve No. 10. Scattered pockets of light infestation were observed in several townships south of Lake Nipissing.
1978	Populations collapsed; no sawflies were found.
1979	not reported
1980	Pockets of light-to-moderate defoliation were observed in Calvin, Lauder and Papineau twps.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Host(s): pine [Major]

Year	Remarks
1950	High populations occurred in plantations in Hardy and Nipissing twps. Defoliation reached nearly 100% on occasional trees. Light damage was detected in South Himsworth, East Mills and Widdifield twps.
1951	Severe damage occurred on roadside windbreaks near Sturgeon Falls and in a small area of red pine reproduction in Bonfield Twp. Small numbers of colonies were detected in North Himsworth, South Himsworth and Boulter twps.
1952	This sawfly severely defoliated small red pine trees in windbreaks in the Sturgeon Falls area. Light damage occurred at scattered points in Patterson, Pringle, Gurd, North Himsworth and Boulter twps in the southern part of the district.
1953	Red pine windbreaks in the Sturgeon Falls area were severely defoliated for the third consecutive year. Light tree mortality was evident in the area. Small numbers of larval colonies were observed at numerous locations elsewhere in the district.
1954	High populations caused moderate-to-severe defoliation of small red pine trees in Pedley, Beaucage and Gladman twps and of windbreaks in the Sturgeon Falls area. Repeated defoliation of these windbreaks for four consecutive years has caused heavy tree and branch mortality.
1955	A general decline in populations was evident when only small numbers of larval colonies could be found.
1956	Populations increased and colonies were found commonly on red pine reproduction.
1957	An increase in the population of this sawfly occurred. Pockets of light infestation were observed in Bertram, Bonfield, East Ferris, Widifield, Hugel, Crerar and McLaren, Boulter and Chisolm twps.

(cont'd)

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) (cont'd)

Year	Remarks
1958	No appreciable change in the population of this sawfly could be determined. Pockets of light infestation recurred in Bonfield, Widdifield, Boulter and Chisholm twps. New, light infestations were found in Kirkpatrick, Gladman and South Himsworth twps.
1959	A mixed plantation of red pine and jack pine trees in Springer Twp suffered severe defoliation. Elsewhere there was a general reduction in populations.
1960	Scattered colonies were observed in Springer Twp. Chemical control measures carried out by property owners reduced potentially high populations in the area.
1961	Small numbers of colonies were observed in Hugel and Calvin twps.
1962	A light infestation of this sawfly was detected in a mixed jack pine and red pine plantation in Springer Twp. Scattered larval colonies were observed in two plantations in Widdifield Twp.
1963	A light infestation persisted in Springer Twp. Control measures were carried out by property owners. Scattered colonies recurred in two plantations in Widdifield Twp.
1964	The light infestation previously reported in Springer Twp recurred in 1964 and scattered colonies were again present in a mixed plantation in Widdifield Twp.
1965	Mixed pine plantations in Springer, Widdifield and Phelps twps were lightly infested.
1966-1967	Light infestations recurred in pine plantations in Widdifield and Phelps twps and scattered colonies were observed in Springer and Mattawan twps.
1968	Populations of this sawfly declined. Only small numbers of colonies were found in Widdifield Twp, where a light infestation was recorded over the previous three years. A trace population occurred in McLaren and West Ferris twps.

(cont'd)

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) (concl.)

Year	Remarks
1969	Little change in populations of this sawfly occurred. Scattered colonies were observed in Widdifield, West Ferris and East Ferris twps.
1970	Light infestations were observed in plantations in the North Bay area, on red pine reproduction in Sisk Twp and near Jumping Caribou Lake.
1971	Light infestations persisted in plantations in the North Bay area. Small numbers were observed at scattered points elsewhere.
1972	Sharp increases in the population of this sawfly were noted in red pine plantations in the vicinity of North Bay. Moderate-to-severe defoliation occurred in some of the infested plantations.
1973	Little change in the population of this sawfly was observed. High numbers persisted in plantations in the vicinity of North Bay but few colonies were detected elsewhere.
1974	The infestation previously reported in the area surrounding North Bay declined in intensity, resulting in only light defoliation. Small numbers were observed at scattered points elsewhere.
1975	Low populations persisted in plantations in the vicinity of North Bay.
1976-1977	Small numbers of colonies were observed in Cameron Twp.
1978-1980	not reported

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Host(s): jP [Major]

Year	Remarks
1950-1952	not reported
1953-1954	Small numbers of larval colonies were observed on shoreline trees on Wicksteed Lake in Gooderham Twp.
1955-1956	not reported
1957	Pockets of light infestation occurred at scattered points on the south shore of Lake Nipissing and at one location in Dana Twp.
1958	Small numbers of larval colonies were found in Merrick Twp.
1959-1963	not reported
1964-1971	Scattered colonies were observed on the shoreline of Lake Nipissing in McPherson Twp.
1972-1980	not reported

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex

Host(s): jP, rP [Major]

Year		Remarks
1950	*N. virginianus* complex	Small numbers were observed in Sisk and Widdifield twps.
1951	"	Small numbers of immature trees were severely defoliated in Sisk and Merrick twps.
1952	"	Small numbers of larval colonies were observed on small, open-grown trees at widely separated locations.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex (cont'd)

Year		Remarks
1953	*N. virginianus* complex	Low populations of this sawfly were observed at numerous locations; however, defoliation was negligible.
	N. pratti banksianae	Small numbers of larval colonies were observed at widely separated locations.
1954	*N. virginianus* complex	A general increase in the population was evident when moderate-to-severe defoliation was observed on small numbers of trees at several points. A light infestation occurred on a hedgerow in Pedley Twp as well.
	N. pratti banksianae	Populations of this sawfly remained at much the same low level as in the previous year.
1955	*N. virginianus* complex	Populations declined. Only a small number of colonies could be found.
	N. pratti banksianae	A new heavy infestation caused approximately 75% defoliation on an island in Lake Nipissing. Elsewhere populations declined to a low level.
1956	*N. virginianus* complex	Populations remained low. Only small numbers of colonies could be found.
	N. pratti banksianae	A heavy infestation occurred on two islands in Lake Nipissing. Severe defoliation caused the late larval populations to migrate in search of food on one of the islands.
	N. nanulus nanulus	Small numbers of larval colonies were observed in Gladman Twp.
1957	*N. virginianus* complex	Colonies were commonly observed in the southern part of the district. Elsewhere only trace populations could be found.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex (cont'd)

Year		Remarks
1957	*N. pratti banksianae*	A heavy infestation recurred on two islands in Lake Nipissing. Repeated defoliation of host trees has caused considerable tree mortality on one of the islands.
	N. nanulus nanulus	Populations were at an endemic level.
1958	*N. virginianus* complex	Pockets of light and medium infestations were observed at numerous points. In most instances defoliation was confined to open-grown or fringe trees.
	N. pratti banksianae	Heavy infestations of this sawfly recurred on two small islands and severe defoliation was also evident on small groups of shoreline trees in Lake Nipissing. Scattered colonies were observed elsewhere in the southern part of the district.
	N. nanulus nanulus	Scattered colonies were observed on shoreline trees along Lake Nipissing and in a plantation in South Himsworth Twp.
1959	*N. virginianus* complex	Light infestations were observed at scattered points in the northern part of the district.
	N. pratti banksianae	Heavy infestations persisted on two small islands in Lake Nipissing. Populations were light on shoreline stands at scattered points elsewhere.
1960	*N. virginianus* complex	Populations declined; although scattered larval colonies were observed at several locations, defoliation was negligible.
	N. pratti banksianae	A marked decline in numbers of this sawfly was evident on islands in Lake Nipissing where heavy infestations had persisted for several years. Elsewhere colonies were rarely observed.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex (cont'd)

Year		Remarks
1961	*N. virginianus* complex	Populations were at a low ebb; scattered colonies were observed at one point in Sisk Twp.
	N. pratti banksianae	Small numbers of colonies were observed at widely separated points in the southern part of the district.
	N. nanulus nanulus	Small numbers of colonies were observed in Hugel and Calvin twps.
1962	*N. virginianus* complex	Populations remained at a low ebb.
	N. pratti banksianae	Populations of this sawfly increased. Light infestations occurred in Dana and Pardo twps. Occasional small trees were severely defoliated within these areas. Scattered colonies were observed at several locations elsewhere in the district.
	N. nanulus nanulus	A small pocket of light infestation occurred in Calvin Twp.
1963	*N. pratti banksianae*	Larval colonies of this sawfly were found commonly on islands and shorelines of Lake Nipissing.
	N. nanulus nanulus	Pockets of light infestation occurred in Calvin, Papineau and Mattawan twps.
1964	*N. pratti banksianae*	Colonies of this sawfly occurred commonly in jack pine stands in the western part of the district and along shorelines and on islands in Lake Nipissing.
	N. nanulus nanulus	Colonies were observed commonly in the western and central parts of the district; defoliation was negligible.
1965	*N. pratti banksianae*	An abrupt decline in the population of this sawfly occurred. Very few colonies were found.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex (cont'd)

Year		Remarks
1965	*N. nanulus nanulus*	Small numbers of colonies were observed in Caldwell, Crerar and Gibbons twps.
1966	*N. virginianus* complex	Colonies of this sawfly were found commonly on fringes of stands on rocky sites.
	N. pratti banksianae	Scattered colonies were observed in jack pine stands in Scholes and Badgerow twps.
1967	*N. virginianus* complex	Little change in population levels occurred. Colonies were observed at numerous points; however, defoliation was negligible.
	N. pratti banksianae	Small fringe trees were lightly defoliated in Falconer, MacPherson and Loudon twps. Scattered colonies were observed in Badgerow and Bonfield twps.
	N. nanulus nanulus	Small numbers of colonies were found commonly in several stands in the southern part of the district and on shorelines and islands in Lakes Nipissing.
1968	*N. virginianus* complex	A general increase in the population of this sawfly was evident when colonies were found commonly at numerous locations. Heavy defoliation of small groups of trees was observed in Sisk Twp.
	N. nanulus nanulus	Little change in populations could be determined. Small trees were lightly defoliated at numerous locations, particularly in the southwestern part of the district.
1969	*N. virginianus* complex	Colonies of this sawfly were found in numerous jack pine stands and small-diameter trees were lightly defoliated at several locations.
	N. nanulus nanulus	Populations declined; only small numbers of colonies were observed in the northern part of the district.
1970	*N. virginianus* complex	Small numbers of colonies were observed at scattered locations in the district. Defoliation was negligible.
1971		not reported

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl.; *N. pratti banksianae* Roh.; *N. virginianus* complex (concl.)

Year		Remarks
1972	*N. pratti banksianae*	Small numbers of colonies were detected at widely separated locations.
	N. nanulus nanulus	Populations remained at a low ebb. Only small numbers of colonies could be found.
1973	*N. pratti banksianae*	Colonies of the sawfly were observed more frequently than in recent years.
	N. nanulus nanulus	Scattered colonies occurred at numerous locations in the district.
1974-1976		not reported
1977	*N. pratti banksianae*	Scattered colonies were detected at a small number of locations.
1978-1980		not reported

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Host(s): spruce [Major]

Year	Remarks
1950	Low populations of this sawfly were detected on open-grown and fringe black and white spruce trees at scattered locations in the district.
1951-1952	High populations caused severe defoliation of white spruce trees on windbreaks along highways in the Sturgeon Falls area. Small open-grown and lakeshore trees were damaged at scattered points elsewhere.
1953	High populations of this sawfly recurred on windbreaks along highways in the Sturgeon Falls area. Considerable deterioration of tree crowns is evident in some of the damaged windbreaks.

(cont'd)

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) (cont'd)

Year	Remarks
1954	not reported
1955	A new heavy infestation occurred on highway windbreaks in the Verner area. Numerous trees suffered close to 100% defoliation in the area. Small pockets of severe defoliation occurred on exposed sites and along shorelines at scattered locations elsewhere.
1956	not reported
1957	Small heavy infestations were observed on spruce reproduction along roadsides and in exposed areas.
1958	Pockets of moderate-to-severe defoliation occurred along Highway 11 from the northern boundary of the district southward to North Bay, along lakeshores and on reproduction in exposed sites.
1959	Small areas of heavy infestation were detected in Merrick and Widdifield twps and severe defoliation occurred on highway windbreaks in the Verner area.
1960	Populations subsided to a low intensity; however, light damage was widely distributed through the district.
1961	Populations remained at a low intensity; only light defoliation could be found.
1962	Populations declined to reach a low ebb. No defoliation could be found at numerous points examined.
1963	Numbers of this sawfly increased over the previous year and caused light defoliation on windbreaks and hedgerows in Casimir, Pedley and Caldwell twps.
1964	Only small numbers of this insect could be found.
1965	Populations increased and caused light-to-moderate defoliation on windbreaks in the Verner-Sturgeon Falls area.
1966	Numbers increased for the second consecutive year and caused moderate-to-severe defoliation of open-grown trees in Sisk and Gladman twps.

(cont'd)

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) (concl.)

Year	Remarks
1967	An appreciable increase in population intensities and distribution of this sawfly was evident. Spruce windbreaks and hedgerows were severely defoliated in the Sturgeon Falls, Verner and Warren areas. Light defoliation of open-grown spruces were observed at numerous locations elsewhere.
1968	High populations recurred and caused severe defoliation of windbreaks in the Verner area.
1969	High populations persisted and caused severe defoliation of windbreaks and in plantations at several points.
1970-1972	not reported
1973	High populations caused moderate-to-severe defoliation of small numbers of trees at widely separated points.
1974-1976	not reported
1977	Scattered open-grown trees were severely defoliated in East Ferris and Bonfield twps.
1978	Small numbers were observed at widely separated points.
1979-1980	not reported

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce [Major]

Year	Remarks
1950-1952	not reported
1953	A high population of this weevil damaged more than 80% of the trees in an immature stand of white pine in French Twp.
1954	A high population caused severe damage in a white pine stand in Phelps Twp. Light damage was observed at several locations elsewhere in the district.

(cont'd)

White Pine Weevil, *Pissodes strobi* (Peck) (cont'd)

Year	Remarks
1955	Serious damage by the white pine weevil was observed in immature white pine stands at several points in the district. Surveys in immature white pine stands in French and Parkman twps revealed an incidence of 76% and 80% damage, respectively.
1956-1957	Heavy damage by this insect recurred in several immature white pine stands.
1958	Damage caused by this weevil was widely distributed in the district. Immature white pine, jack pine, Scots pine and white spruce were affected.
1959	No appreciable change in the population of this weevil occurred. White pine and black spruce reproduction suffered damage at numerous locations.
1960	Heavy infestations persisted in white pine reproduction areas. Heavy damage on black spruce trees again occurred along Hwy 11, north of North Bay.
1961-1963	No discernible change in the population of this weevil could be determined.
1964	Extensive damage to white pine reproduction recurred. Jack pine, black and white spruce were also attacked in varying degrees at many locations.
1965	High populations of the white pine weevil persisted and caused extensive damage in white pine reproduction areas and in plantations.
1966	High populations persisted at many points in the district.
1967-1968	As in recent years, extensive damage was observed at many locations in the district.
1969-1971	High populations persisted in many areas, particularly in white pine reproduction in cutover areas.
1972-1973	Little change occurred in the incidence of damage caused by this weevil.
1974	A general increase in the incidence of weevil damage in young pine stands was evident.

(cont'd)

White Pine Weevil, *Pissodes strobi* (Peck) (concl.)

Year	Remarks
1975	High populations persisted in young pine stands at numerous locations. Surveys revealed that leader damage ranged up to 52%.
1976	Populations remained high; samples at two points in young white pine stands revealed an average incidence of 32% leader damage.
1977	A high incidence of leader damage occurred in Badgerow, Boulter and Lauder twps. The incidence of weevil attack in these townships average 25%.
1978	Little change occurred in populations over the previous year, except in Lauder Twp, where the incidence of damage decreased from 17% to 2%.
1979-1980	Moderate damage caused by this weevil was observed commonly in young pine stands at several locations.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): larch [Major]

Year	Remarks
1950-1952	not reported
1953	Small numbers were found in a larch stand in Bastedo Twp.
1954	Populations increased and caused moderate-to-severe defoliation in a stand in Olrig Twp. Light damage was recorded in several other townships (see map, page 100).
1955	Populations increased markedly and caused moderate-to-severe defoliation in many stands throughout the district (see map, page 101). Defoliation averaged more than 70% in affected stands.
1956	A marked increase in the intensity of larch sawfly infestations occurred. Many larch stands were moderately to severely defoliated (see map, page 102).

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (cont'd)

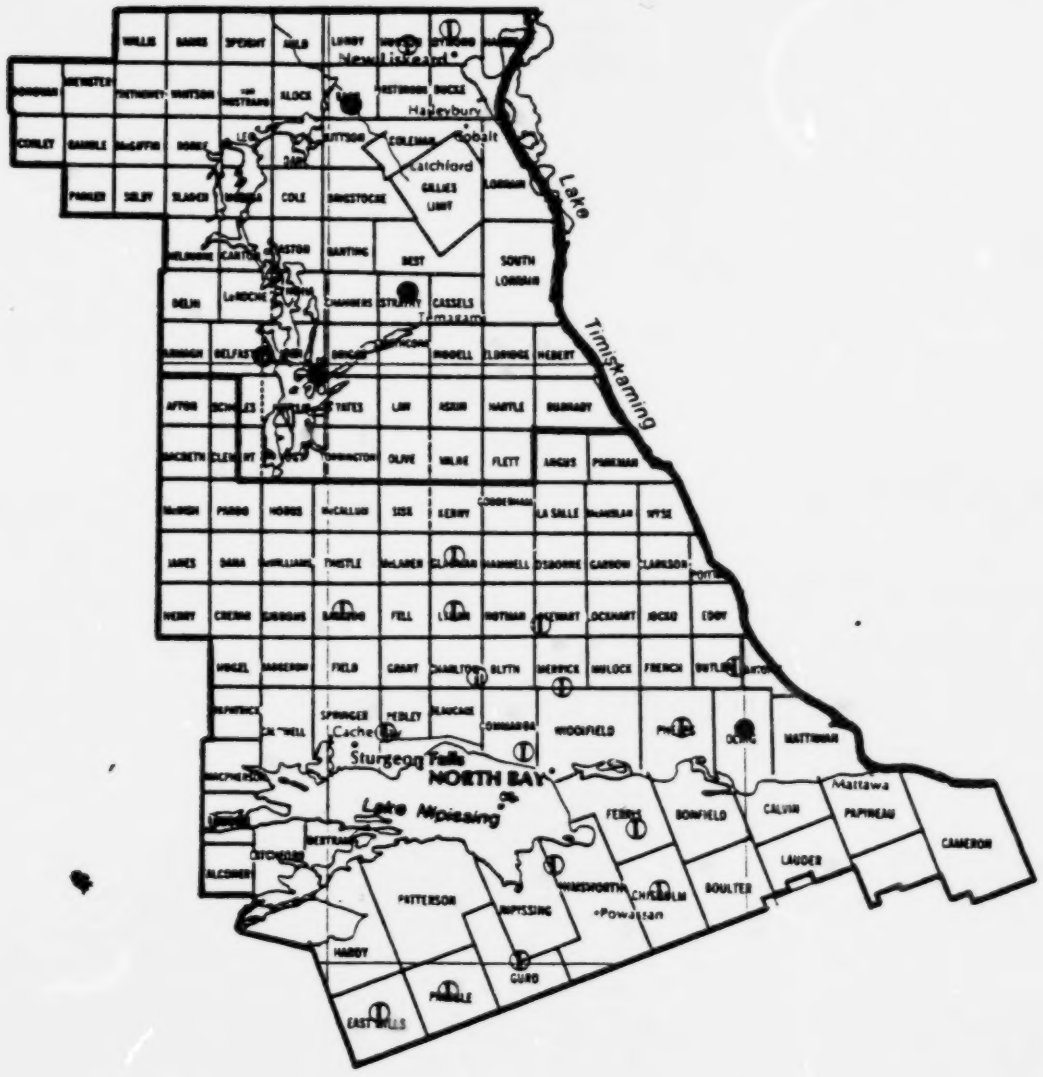
Year	Remarks
1957	Moderate-to-severe defoliation recurred at numerous points and pockets of light damage were observed in the area south of Lake Nipissing (see map, page 103).
1958	High populations persisted and caused moderate-to-severe defoliation at numerous points north of North Bay. Light defoliation was observed at numerous locations elsewhere in the district (see map, page 104).
1959	Moderate-to-severe defoliation recurred in numerous larch stands located north of Hwy 17 and west of Hwy 11. Pockets of light infestation were observed at several locations elsewhere in the district (see map, page 105).
1960	A decrease in the number of larch stands where moderate-to-severe defoliation occurred was evident; however, light damage was observed at several points (see map, page 106).
1961	A marked decline in the population of this sawfly was evident when only small numbers of colonies could be found.
1962-1964	Trace populations were observed.
1965	Light defoliation occurred in small larch stands in Loudon Twp. Scattered colonies were observed at numerous points elsewhere.
1966-1967	Light infestations were evident in several small larch stands in Loudon and Falconer twps. Small numbers of colonies were observed at scattered points elsewhere.
1968	Little change in the population of this sawfly could be determined. Light defoliation was evident in larch stands in Loudon and Falconer twps and in small stands in the vicinity of North Bay. Scattered colonies were observed at numerous other locations.
1969	A general increase in populations was evident. Moderate-to-severe defoliation was observed on fringe trees and in several small stands north of North Bay. Scattered colonies were present in many additional stands.

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (concl.)

Year	Remarks
1970-1971	Several small stands of tamarack were moderately to severely defoliated by the sawfly in the southern part of the district.
1972	Populations of this sawfly declined sharply and only scattered colonies were found.
1973-1976	Small numbers of colonies were observed at widely separated points.
1977	Populations increased and caused moderate-to-severe defoliation of larch stands in Indian Reserve No. 10 and in Pedley, Widdifield and Chisholm twps. Light damage was observed in Lauder, South Himsworth, McLaren and Bonfield twps.
1978	Populations declined markedly; only scattered colonies could be found.
1979	Small numbers of colonies were observed at widely separated locations.
1980	not reported

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Larch Sawfly

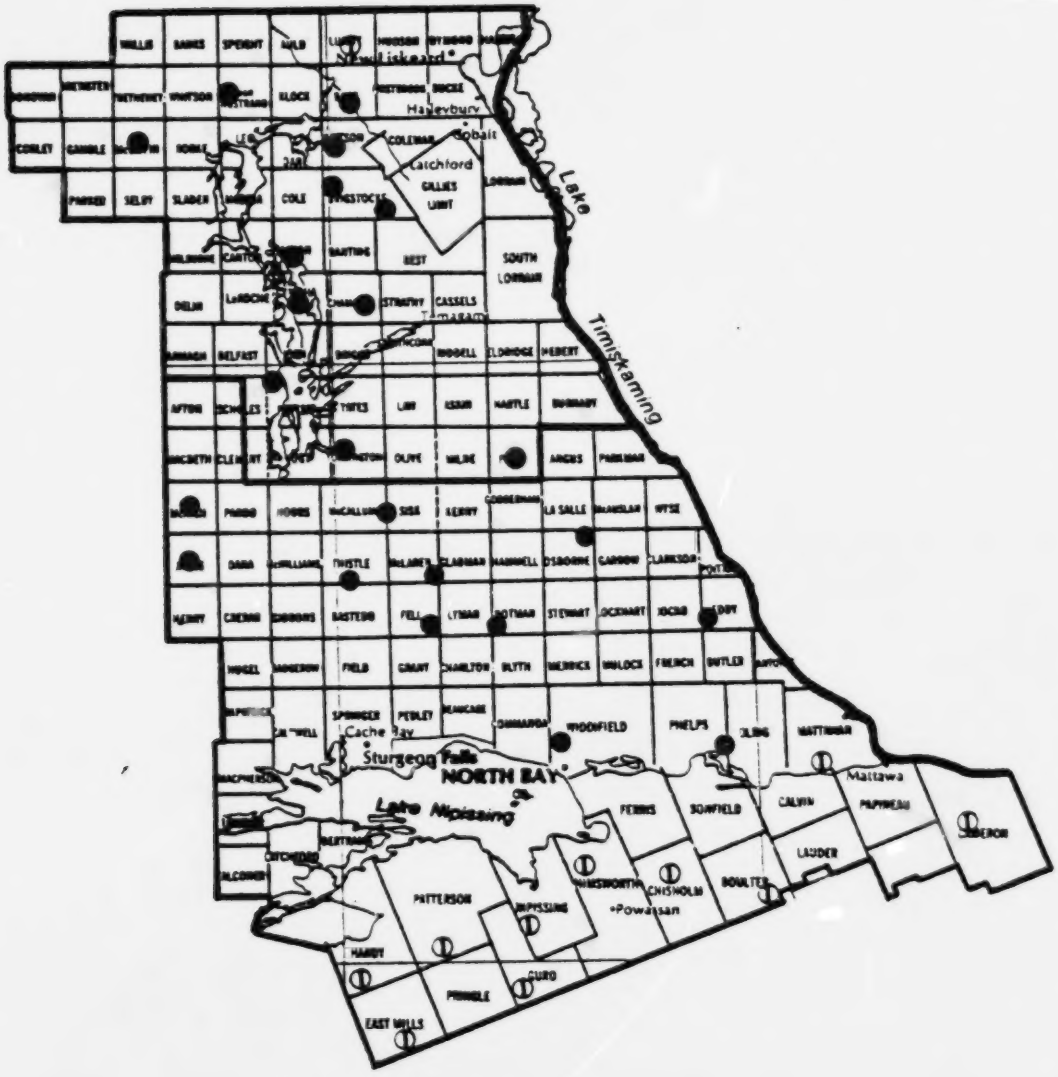
Areas within which defoliation occurred in 1954

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Larch Sawfly

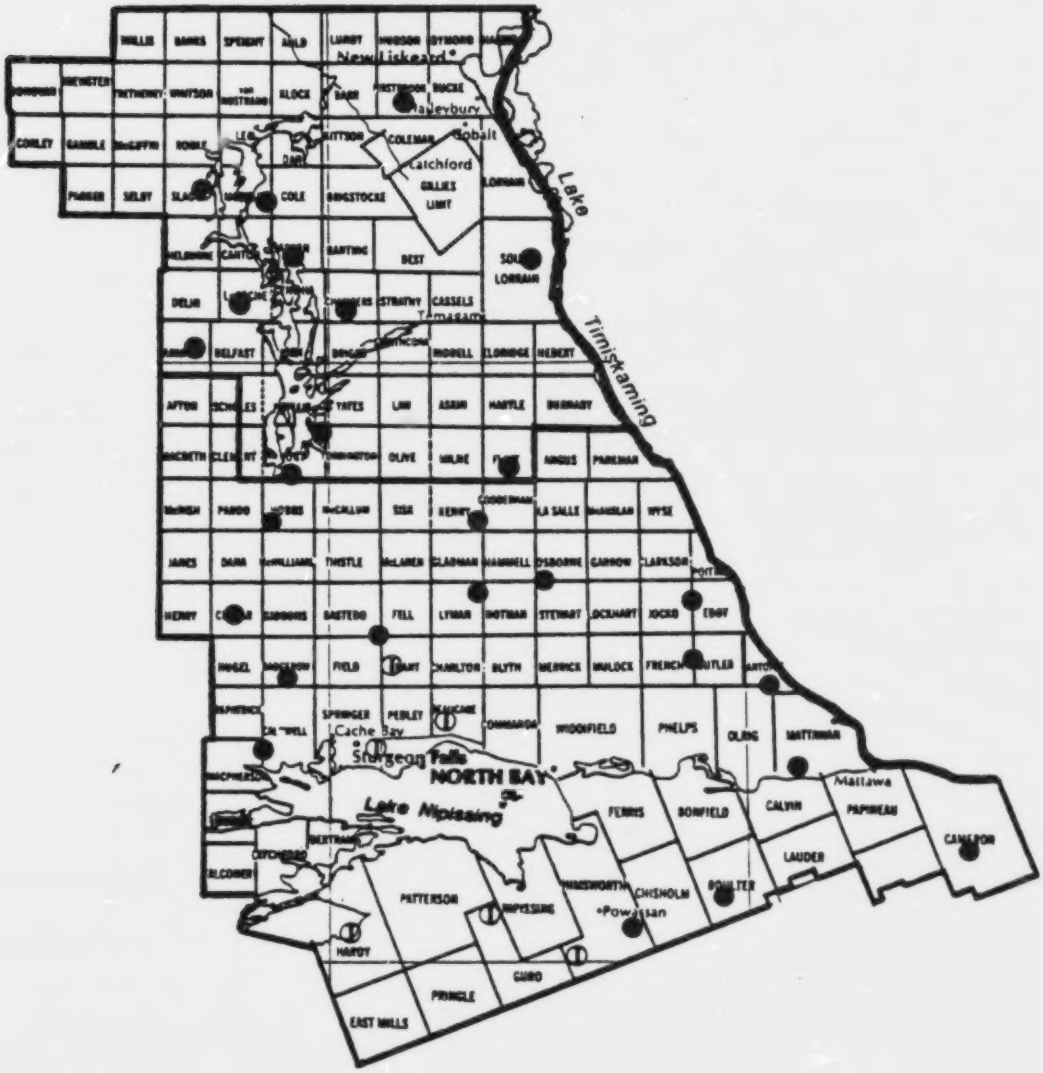
Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Larch Sawfly

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS

Larch Sawfly

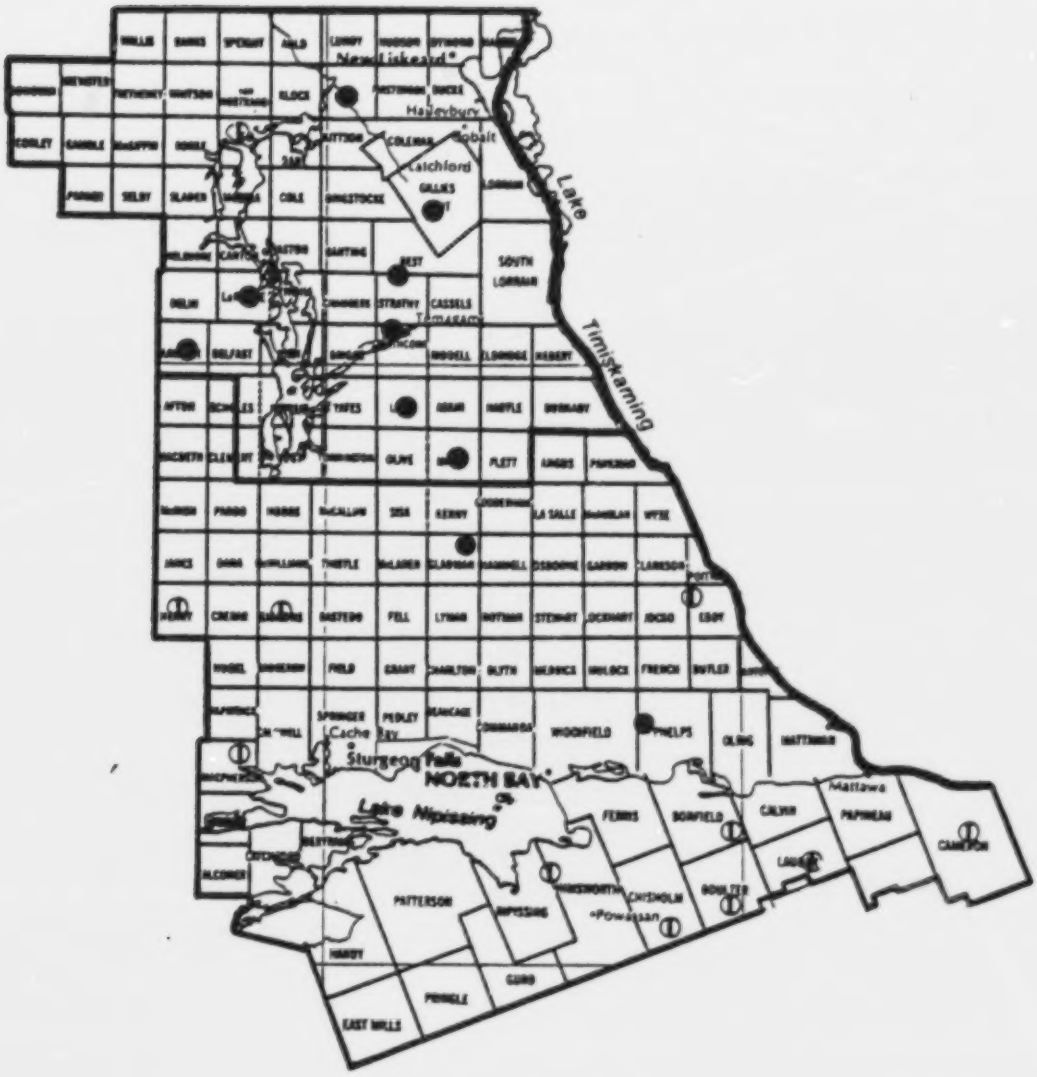
Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1958

LEGEND

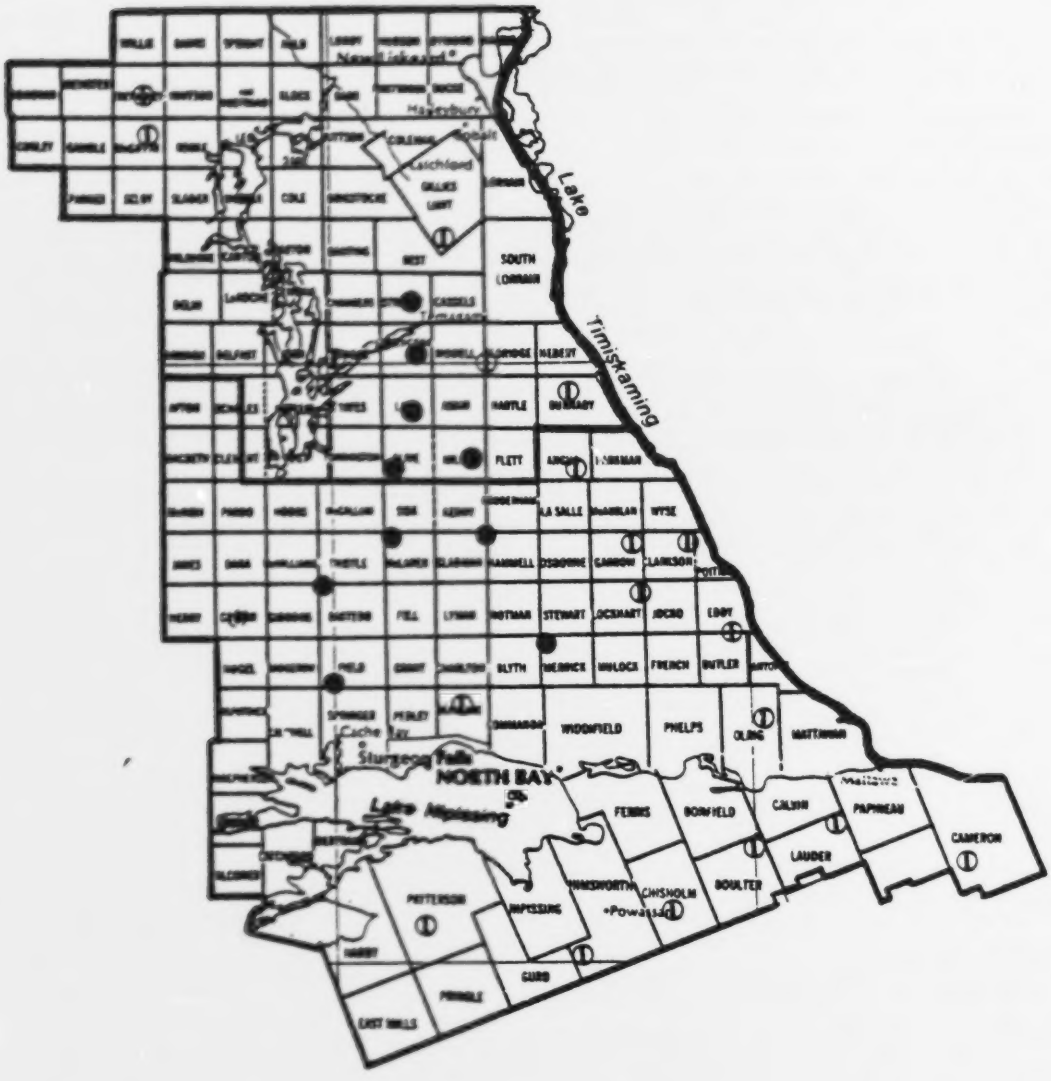
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

TEMAGAMI AND NORTH BAY DISTRICTS



Scale

Kilometres 20 10 0 20

Larch Sawfly

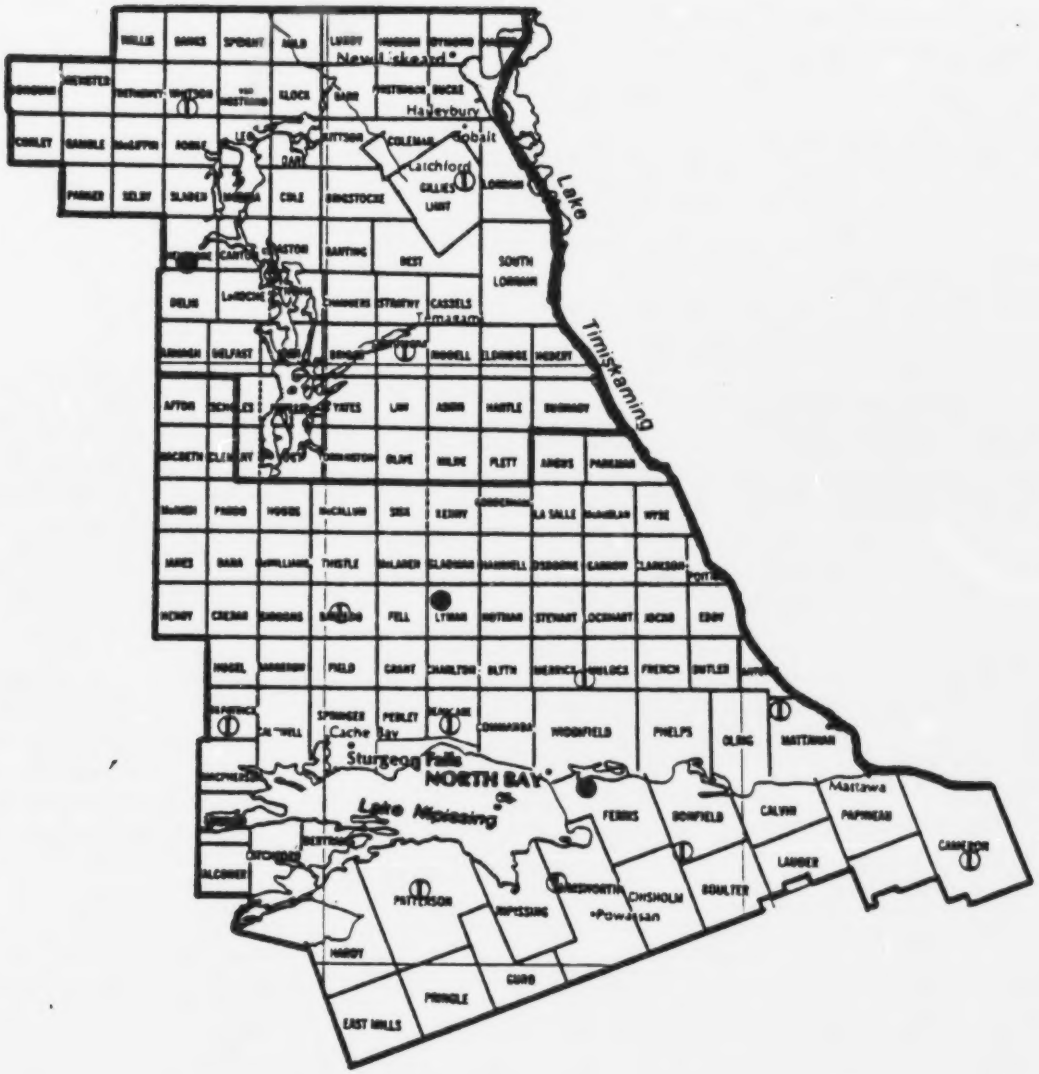
Areas within which defoliation occurred in 1959

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

TEMAGAMI AND NORTH BAY DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)

Host(s): Mo [Major]

Year	Remarks
1950-1952	not reported
1953	Medium-to-heavy infestations of this sawfly occurred in the vicinity of North Bay and at scattered points along Hwy 17 between North Bay and the town of Mattawa.
1954	not reported
1955	Pockets of moderate-to-severe defoliation were observed at numerous locations in the southeastern part of the district.
1956	Populations of this sawfly increased and caused moderate-to-severe defoliation of host trees at numerous locations in the southeastern part of the district. Pockets of light infestation were observed at several points elsewhere.
1957	Little change in populations of this insect occurred. Moderate-to-severe defoliation of host trees was observed at numerous points in the southeastern part of the district. A small light infestation of second-generation sawflies was found in Widdifield Twp in September.
1958	High populations caused moderate-to-severe defoliation of mountain-ash trees at numerous points between Marten River and North Bay. Severe defoliation also occurred on ornamentals within the city of North Bay.
1959	High populations recurred and caused moderate-to-severe defoliation at numerous points in the district.
1960	A marked decline in populations of this sawfly was evident when defoliation at a light intensity was confined to single trees at scattered points.
1961	Small groups of trees were severely defoliated in Osborne, LaSalle, McAuslan and Gooderham twps. Light damage was observed at numerous points elsewhere in the district.

(cont'd)

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) (concl.)

Year	Remarks
1962	Populations increased and caused moderate-to-severe defoliation of host trees at many locations in the southeastern part of the district. Light damage was evident at numerous points through the northern section.
1963	Populations declined; light-to-moderate defoliation was generally confined to ornamentals in urban areas.
1964	Light defoliation occurred on small groups of trees at numerous points in the district. Small numbers of ornamentals were severely defoliated in North Bay.
1965	Populations increased and caused moderate-to-severe defoliation at numerous points in the district.
1966-1967	High numbers recurred on ornamentals in North Bay; elsewhere populations declined to small numbers of colonies at widely separated points.
1968-1970	High populations caused moderate-to-severe defoliation of small groups of trees at numerous locations throughout the district.
1971-1972	Small numbers were observed at numerous locations through the district.
1973	Populations increased and caused moderate-to-severe defoliation of host trees at many locations.
1974	Populations declined; only small numbers of colonies were observed.
1975	Moderate-to-severe defoliation occurred on ornamentals in the city of North Bay. Small numbers of colonies were observed at numerous locations elsehwere.
1976	High populations occurred in Blyth, Merrick, Widdifield and Phelps twps.
1977	Populations declined; small numbers of colonies were observed at three locations.
1978-1980	Populations remained low; few colonies were found.

Birch Leafminers, *Profenusa thomsoni* (Konow) and *Fenusa pusilla* (Lep.)

Host(s): birch [Major]

Year		Remarks
1950-1953		not reported
1956	*P. thomsoni*	Low populations of this leafminer were observed at numerous locations.
	F. pusilla	High populations occurred on roadside reproduction in Falconer and Gibbons twps.
1957	*P. thomsoni*	Populations increased and caused light defoliation of birch at several locations.
1958	*P. thomsoni*	No appreciable change in intensity over the previous year could be determined.
	F. pusilla	Small numbers were observed at scattered locations.
1959	*P. thomsoni*	This insect was found commonly in most white birch stands. Heavy damage was evident in East Ferris and McLaren twps.
	F. pusilla	Moderate damage caused by this leafminer was observed at several points in the southern part of the district.
1960	*F. pusilla*	Populations of this insect remained at much the same intensity as in the previous year. Damage was observed in many stands in the southern part of the district.
1961	*F. pusilla*	Medium infestations persisted in woodlots through the southern part of the district.
1962	*P. thomsoni*	Light-to-medium infestations were observed in white birch stands at numerous locations in the northern part of the district.

(cont'd)

Birch Leafminers, *Profenusa thomsoni* (Konow) and *Fenusa pusilla* (Lep.) (cont'd)

Year		Remarks
1963-1964	*P. thomsoni*	Only small numbers were observed.
1965	*P. thomsoni*	There was an appreciable increase in the population of this leafminer. Light infestations were observed at numerous locations through the district.
1966	*P. thomsoni*	Populations remained at much the same intensity as in the previous year and caused light damage in numerous stands.
	F. pusilla	Heavy infestations caused severe browning of foliage at scattered locations.
1967	*F. pusilla*	High populations occurred on open-grown and fringe trees in many white birch stands in the southern part of the district.
	P. thomsoni	Light infestations were observed commonly in the district.
1968	*F. pusilla*	Severe mining of foliage of small white birch trees was evident at numerous locations. Leaves of ornamental birch were heavily damaged at many locations in the city of North Bay as well.
	P. thomsoni	Small numbers of this leafminer could be found in most white birch stands in the district.
1969	*F. pusilla*	High populations recurred for the fourth consecutive year. Small open-grown and fringe trees were severely damaged at numerous locations.

(cont'd)

Birch Leafminers, *Profenusa thomsoni* (Konow) and *Fenusa pusilla* (Lep.) (cont'd)

Year		Remarks
1970	*F. pusilla*	Varying degrees of mining of white birch foliage were observed throughout the district. Severe damage occurred on open-grown and ornamental trees at many locations through this area.
1971	*F. pusilla*	Widespread mining of birch foliage was evident in the district. Severe damage recurred in the North Bay area and in Phelps Twp.
	P. thomsoni	Varying degrees of damage were observed at widely separated points.
1972	*F. pusilla*	Little change in the population of the leafminer occurred. Severe damage recurred in the North Bay area and in Phelps Twp.
	P. thomsoni	Light-to-moderate damage was noted at scattered locations.
1973,	*F. pusilla*	Severe mining occurred, particularly on open-grown trees and reproduction in the southern part of the district.
	P. thomsoni	Populations declined; very few insects could be found.
1974	*F. pusilla*	Moderate-to-severe damage occurred in Phelps, Bonfield and Widdifield twps.
1975	*F. pusilla*	Populations declined to a light-to-medium intensity.
1976	*F. pusilla*	Pockets of light-to-medium infestation recurred at several locations.
1977	*F. pusilla*	Individual trees were severely damaged at scattered points in Crerar, Papineau and Widdifield twps.

(cont'd)

Birch Leafminers, *Profenusa thomsoni* (Konow) and *Fenusa pusilla* (Lep.) (concl.)

Year		Remarks
1978	*F. pusilla*	Small hedgerow white birch trees sustained moderate-to-severe damage in Widdifield Twp. Only small numbers were observed elsewhere.
1979	*F. pusilla*	Light-to-medium populations were observed at widely separated locations.
1980	*F. pusilla*	Populations increased; moderate-to-severe damage occurred on small open-grown or fringe trees at several locations.

Other Noteworthy Insects

Eastern Blackheaded Budworm, *Acleris variana* (Fern.)

Host(s): spruce, bF [Major]

Year	Remarks
1950-1953	not reported
1954	low populations at scattered locations
1955-1956	not reported
1957-1962	small numbers collected from widely separated points
1963	not reported
1964-1968	small numbers at several points
1969-1971	not reported
1972	trace levels at a few locations
1973-1980	not reported

Pine Spittlebug, *Aphrophora cribrata* (Walker)

Host(s): conifers [Major]

Year	Remarks
1950-1958	not reported
1959	high numbers at numerous points
1960-1964	small numbers in many stands
1965-1967	not reported
1968	observed commonly at many points
1969-1971	not reported
1972	high populations in numerous stands
1973-1977	general decline in numbers
1978	small numbers at a few locations
1979-1980	not reported

Uglynest Caterpillar, *Archips cerasivoranus* (Fitch)

Host(s): cherry [Minor]

Year	Remarks
1950-1955	not reported
1956	heavy infestations in French and Thistle twps
1957	not reported
1958	common throughout the district
1959-1960	not reported
1961-1962	pockets of heavy infestation through district
1963	not reported
1964-1966	small numbers of tents through district
1967-1970	a general increase in population levels, with pockets of heavy infestation in French, McWilliams and Notman twps
1971-1972	high numbers of tents in French Twp
1973-1975	populations at very low levels
1976-1978	not reported
1979-1980	light-to-medium infestations at many points

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.)

Host(s): oak [Major]

Year	Remarks
1950-1971	not reported
1972	light defoliation at many locations
1973-1980	not reported

Aspen Leafroller, *Epinotia criddleana* Kft.

Host(s): poplar [Minor]

Year	Remarks
1950-1961	not reported
1962-1964	Pockets of light and moderate-to-severe defoliation occurred in the southern part of the district.
1965-1980	not reported

Birch-aspen Leafroller, *Epinotia solandriana* Linn.

Host(s): birch, poplar [Major]

Year	Remarks
1950-1956	not reported
1957-1961	small numbers of larvae at numerous points in the district
1962-1964	pockets of medium-to-heavy infestation at many points in the district
1965	not reported
1966-1968	pockets of heavy infestation at many points in the southern part of the district
1969-1973	light infestations through the district
1974-1980	not reported

Linden Looper, *Erannis tiliaria* (Harr.)

Host(s): deciduous [Major]

Year	Remarks
1950-1958	not reported
1959	found commonly in Eddy and Butler twps
1960-1961	not reported
1962	trace populations at several points in the southern part of the district
1963	remained at low ebb
1964-1972	not reported
1973	small numbers found at many points
1974	not reported
1975-1976	light defoliation in Merrick and Patterson twps
1977-1980	not reported

Pine Needleminer, *Exoteleia pinifoliella* (Cham.)

Host(s): jP [Major]

Year	Remarks
1950-1953	not reported
1954	light needle damage in the southeastern part of the district
1955	Populations declined to low levels.
1956	moderate-to-severe mining on scattered trees in southeastern part of the district
1957	Populations declined to low levels.

(cont'd)

Pine Needleminer, *Exoteleia pinifoliella* (Cham.) (concl.)

Year	Remarks
1958	moderate mining in the southwestern part of the district
1959	not reported
1960-1961	light infestation in Widdifield Twp
1962	not reported
1963-1964	low populations at several points
1965	not reported
1966	small numbers in the southern part of the district
1967-1968	no significant change in population levels
1969-1970	not reported
1971-1972	low numbers at several locations
1973	heavily infested trees observed at several locations in the southern part of the district
1974-1980	not reported

Nursery Pine Sawfly, *Gilpinia frutetorum* (F.)

Host(s): pine [Minor]

Year	Remarks
1950-1971	not reported
1972	small numbers found in South Himsworth Twp; first time recorded in the district
1973-1980	not reported

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.)

Host(s): spruce [Minor]

Year	Remarks
1950-1951	not reported
1952-1956	only low populations found
1957	not reported
1958-1963	small numbers found in beating samples
1964	Populations increased to light intensity at sample points.
1965-1970	Populations declined to very low levels.
1971-1972	not reported
1973	low populations at scattered points
1974-1980	not reported

Saddled Prominent, *Heterocampa guttivitta* (Wlk.)

Host(s): sM, Be [Major]

Year	Remarks
1950-1955	not reported
1956-1957	low populations at scattered points
1958-1980	not reported

Native Elm Bark Beetle, *Hylurgopinus rufipes* (Eich.)

Host(s): elm [Major]

Year	Remarks
1950-1963	not reported
1964	common through the southern part of the district
1965-1980	not reported

Fall Webworm, *Hyphantria cunea* (Dru.)

Host(s): deciduous [Major]

Year	Remarks
1950	heavy infestations at scattered points
1951	Populations declined to small numbers.
1952-1954	not reported
1955-1957	colonies common in the southern part of the district
1958	not reported
1959-1960	few colonies observed
1961-1962	not reported
1963	single colonies at scattered points
1964	not reported
1965	Populations declined to a low ebb.
1966	A slight increase in population levels was evident.
1967-1970	Small numbers were observed.
1971-1973	A marked increase in population levels occurred.

(cont'd)

Fall Webworm, *Hyphantria cunea* (Dru.) (concl.)

Year	Remarks
1974-1976	Heavy infestations persisted in the southern part of the district.
1977	A marked decline in population levels occurred.
1978	Low populations occurred in the southwestern part of the district.
1979	light-to-moderate damage present in Beaucage Twp
1980	Light-to-moderate damage recurred in Beaucage Twp.

Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Gn.)

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950-1953	not reported
1954	small numbers observed
1955	Light defoliation was observed on balsam fir in Lasalle Twp.
1956-1957	low numbers at several locations
1958-1961	not reported
1962	small numbers in beating samples
1963-1980	not reported

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Host(s): cherry [Major]

Year	Remarks
1950-1954	high numbers of tents observed through the southern part of the district
1955	not reported
1956-1957	trace populations at a few points
1958	small numbers in Widdifield and Springer twps
1959-1962	tents common in southern part of the district
1963-1966	Populations increased substantially and heavily infested shrubs were conspicuous through the southern part of the district.
1967	not reported
1968	very low numbers around North Bay
1969-1972	not reported
1973-1974	tents at many locations
1975	not reported
1976-1978	low numbers in the southern part of the district
1979-1980	not reported

Spiny Elm Caterpillar, *Nymphalis antiopa* (L.)

Host(s): deciduous [Minor]

Year	Remarks
1950-1951	not reported
1952-1953	willow shrubs heavily defoliated and scattered colonies observed on elm trees

(cont'd)

Spiny Elm Caterpillar, *Nymphalis antiopa* (L.) (concl.)

Year	Remarks
1954-1955	scattered colonies observed in Dana, Field and Pardo twps
1956-1958	not reported
1959-1962	numerous colonies in Merrick Twp; scattered colonies at several points
1963-1964	not reported
1965-1968	scattered colonies observed at widely separated locations
1969-1970	not reported
1971-1972	larval colonies observed at many points
1973-1978	not reported
1979	small numbers of colonies observed at many points
1980	not reported

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck.)

Host(s): jP [Minor]

Year	Remarks
1950-1953	not reported
1954-1955	small numbers in Merrick, French, Pedley and Caldwell twps
1956-1958	small numbers in many jack pine stands
1959-1960	not reported
1961	small numbers at many points
1962-1963	high population in Widdifield Twp

(cont'd)

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck.) (concl.)

Year	Remarks
1964-1965	low numbers through the district
1966	not reported
1967-1968	low populations in the district
1969-1980	not reported

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

Host(s): aspen [Major]

Year	Remarks
1950-1951	not reported
1952	High populations were observed at numerous points throughout the district.
1953-1954	Populations declined to scattered pockets of heavy infestation.
1955-1956	Population decline continued.
1957	not reported
1958-1960	small numbers of lightly mined trees
1961-1964	a general population increase in the southern part of the district
1965	trace population in the southern part of the district
1966	not reported
1967	low populations at a few points
1968-1971	not reported
1972	low populations throughout the district

(cont'd)

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) (concl.)

Year	Remarks
1973	high populations at many locations
1974-1976	Population levels remained high throughout the district.
1977-1980	not reported

Northern Pine Weevil, *Pissodes approximatus* Hopk.

Host(s): pine [Major]

Year	Remarks
1950-1976	not reported
1977	heavy damage in a red pine plantation in Gurd Twp
1978-1980	not reported

Pine Tortoise Scale, *Toumeyella parvicornis* (Ckll.)

Host(s): jP, ScP [Major]

Year	Remarks
1950-1953	not reported
1954-1956	a small pocket of heavily infested trees in Sisk Twp
1957-1958	not reported
1959-1960	small numbers in Widdifield and Caldwell twps
1961-1962	pockets of heavy infestation in Widdifield and Caldwell twps
1963-1964	not reported
1965-1973	single and small groups of trees heavily infested at many points
1974-1980	not reported

DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kumm.

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950-1953	not reported
1954	collected on trembling aspen at one location
1955	considerable tree mortality caused by this pathogen in a mixed stand of red pine and jack pine on Sandy Island, Lake Nipissing
1956-1959	not reported
1960	Light mortality occurred in a red pine plantation in Bonfield Twp.
1961-1977	not reported
1978	Light mortality was observed at a small number of locations.
1979-1980	Trace infection was common in immature stands at scattered locations.

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau

Host(s): elm [Major]

Year	Remarks
1950-1960	not reported
1961	Damage characteristic of this disease was noted at five locations.
1962	Positive cultures of this disease were obtained from Patterson, South Himsworth and Chisholm twps.
1963	No change in the status of this disease was evident over the previous year.

(cont'd)

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau (concl.)

Year	Remarks
1964	A marked increase in the distribution of the disease occurred. Infected trees were found in Widdifield Twp and at five locations in the vicinity of Sturgeon Falls.
1965	Increases in the number of infected trees were observed in Papineau, Mattawa and Widdifield twps and in the Sturgeon Falls area.
1966	Although little change in distribution of the disease could be determined, an increase in the incidence of infection was evident.
1967	Varying degrees of infection were evident in many elm stands throughout the district.
1968	The disease is widely distributed through the district and tree mortality has occurred in several stands.
1969	The incidence of infected trees increased and is now in the moderate-to-severe range, and the number of dead trees is increasing annually.
1970	Damage caused by this pathogen continued to increase in elm stands throughout the district. Considerable tree mortality is apparent in many stands.
1971	The disease continued to cause severe damage and tree mortality in many stands.
1972-1973	Increasing numbers of white elm trees continued to die from disease infection.
1974	Sampling at four locations revealed that current mortality ranged from 2.5% to 40.0% and averaged 18.1%.
1975	Damage caused by this pathogen increased; current mortality averaged 47.5% at four sample plots.
1976	Severe cumulative mortality is evident in many elm stands in the district.
1977-1980	not reported

Needle Rust, *Chrysomyxa ledi* (Alb. & Schw.) d By. and *C. ledicola* Lagh.

Host(s): spruce [Major]

Year	Remarks
1950-1959	not reported
1960	Light damage caused by this needle rust was observed at three locations in the district.
1961	not reported
1962	Heavy foliar damage was evident in several small stands in Widdifield Twp.
1963	Light damage was observed on scattered trees in Olrig, French and Sisk twps.
1964	Light infection occurred at one point in the district.
1965-1966	Varying degrees of infection were observed at several locations.
1967-1968	not reported
1969	Trace infection was observed at widely separated points.
1970-1978	not reported
1979	A trace of this foliage disease was observed on small-diameter black spruce trees at widely separated points.
1980	not reported

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver

Host(s): aspen [Major]

Year	Remarks
1950-1957	not reported

(cont'd)

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver (cont'd)

Year	Remarks
1958	Aspen foliage was severely infected by this pathogen at many locations, particularly in the eastern and southwestern parts of the district.
1959	Moderate-to-severe infection was observed at several points in the central part of the district.
1960-1961	not reported
1962	Severe infection was noted on aspens of all diameter classes in the northwestern part of the district.
1963	Severe infection recurred at numerous locations in the northwestern part of the district.
1964	Severe infection occurred at one point in the northwestern part of the district; light damage was noted at numerous points elsewhere.
1965	Severe damage was observed at numerous locations in the central part of the district.
1966	Pockets of severe infection were observed at many points, particularly in the Field-River Valley area.
1967	Moderate-to-severe infection was observed in numerous small-diameter stands throughout the district.
1968	A decrease in the incidence of this pathogen occurred; light-to-moderate damage was confined to Thistle Twp.
1969	Pockets of moderate-to-severe infection were observed in numerous stands.
1970	Extensive damage to aspen foliage was noted at numerous locations throughout the district.
1971	A marked decrease in the incidence of infection was evident when only light damage could be found.
1972	Damage caused by this disease was of little consequence in the district.

(cont'd)

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver (concl.)

Year	Remarks
1973	Light-to-moderate damage occurred in Cameron Twp; elsewhere only traces of the disease could be found.
1974	Moderate-to-severe damage was observed at numerous points in the southern part of the district.
1975	Pockets of moderate-to-severe damage were observed at scattered points.
1976	Moderate defoliation was observed at many locations throughout the district.
1977	Light foliar damage occurred in Field Twp; elsewhere only traces of the pathogen could be found.
1978	Small pockets of moderate-to-severe damage occurred at two points; traces of infection were observed at many locations elsewhere.
1979-1980	Traces of infection were observed at numerous locations throughout the district.

Sweet-fern Blister Rust, *Cronartium comptoniae* Arth.

Host(s): jP [Major]

Year	Remarks
1950-1958	not reported
1959	This pathogen was observed in several small jack pine stands along the north shore of Lake Nipissing.
1960	Small numbers of infected trees were observed at two points.
1961-1962	not reported
1963	Occasional infected trees were observed in stands in Loudon and Kirkpatrick twps.

(cont'd)

Sweet-fern Blister Rust, *Cronartium comptoniae* Arth. (concl.)

Year	Remarks
1964	Light damage and basal stem cankers were evident in Loudon Twp.
1965	Annual surveys have revealed that this pathogen is widely distributed through the district.
1966	Trees with stem cankers caused by this disease were observed in many stands.
1967	not reported
1968	This disease was observed in many stands in the district. A quantitative sample in a stand in Dana Twp revealed an incidence of 55% infection.
1969-1970	No change in the status of this disease could be determined over the previous year.
1971	This pathogen continues to infect host trees in many stands through the district and light tree mortality was noted at scattered locations.
197[illegible]	Observations indicated that the disease was present at approximately the same level as in the previous year and that light tree mortality occurred at scattered points.
1973	Little change in the incidence of infection by this disease was evident; however, examination of several infected jack pine stands revealed that current mortality ranged from 1% to 5%.
1974-1975	not reported
1976	No important change in the status of this pathogen could be determined. Light damage recurred in numerous stands through the district.
1977-1980	not reported

White Pine Blister Rust, *Cronartium ribicola* J.C. Fisch

Host(s): wP [Major]

Year	Remarks
1950-1954	not reported
1955	Surveys for this pathogen revealed light damage in immature stands at several locations.
1956	not reported
1957	Surveys revealed a low incidence of infection in many stands throughout the district.
1958-1962	No change in the status of this disease could be determined over the previous year.
1963	Surveys including a standard sampling method revealed an incidence of 31% and 33% infection im McLaren and Boulter twps, respectively. Light damage was evident at numerous locations elsewhere.
1964	Branch and stem mortality caused by this pathogen occurred in varying degrees of intensity in most white pine stands in the district.
1965	A pocket of heavy infection was observed in Boulter Twp. Branch and stem mortality occurred along the south shore of Lake Nipissing and in several stands at scattered locations elsewhere.
1966-1967	White pine blister rust continued to cause extensive branch and stem mortality through white pine stands.
1968	Sampling at three locations to determine the incidence of infection caused by this disease showed that infection ranged from 17% in McLaren Twp to 42% in Papineau Twp.
1969-1973	The disease continued to cause considerable mortality of white pine reproduction at many locations throughout the district.
1974	The incidence of infection was generally low in the district except in McLaren Twp, where a moderate incidence of infection was recorded.

(cont'd)

White Pine Blister Rust, *Cronartium ribicola* J.C. Fisch (concl.)

Year	Remarks
1975-1977	The incidence of damage was generally low and usually confined to branches.
1978	A moderate incidence of infection occurred in a plantation in McLaren Twp.
1979-1980	not reported

Needle Cast, *Davisomycella ampla* (Davis) Darker

Host(s): jP [Minor]

Year	Remarks
1950-1957	not reported
1958	Damage to jack pine foliage caused by this fungus was observed in many stands in the district.
1959	Severe damage caused by this disease was evident throughout the district.
1960	Damage caused by this disease decreased in most affected stands.
1961	not reported
1962	Light damage was evident in numerous jack pine stands in the southern part of the district.
1963	This disease was widely distributed and caused varying degrees of foliar damage throughout the district.
1964	Varying degrees of foliar damage persisted at many locations.
1965	Damage was observed at numerous locations, particularly in Merrick, Loudon and Mattawan twps.
1966	Small pockets of heavy infection were observed at five widely separated locations.

(cont'd)

Needle Cast, *Davisomycella ampla* (Davis) Darker (concl.)

Year	Remarks
1967-1970	not reported
1971	Varying degrees of damage occurred at several locations through the district.
1972-1973	Light infection was observed at widely distributed locations.
1974-1980	not reported

Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore)

Host(s): jP, scP [Major]

Year	Remarks
1950-1954	not reported
1955	Light damage was observed at one point.
1956-1957	not reported
1958	Infected jack pine and Scots pine trees were observed in the Martin River area.
1959	not reported
1960	Light damage was observed at one location in Loudon Twp.
1961	not reported
1962	Light damage was observed in jack pine stands at several points.
1963	Branch galls caused by this pathogen were found in many jack pine stands, particularly in Merrick, Loudon, Mattawan and Caldwell twps.
1964-1969	not reported

(cont'd)

Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) (concl.)

Year	Remarks
1970	Infection by this pathogen was observed in many stands. A quantitative sample in Mattawan Twp revealed moderate damage in the stand examined.
1971	Varying degrees of infection occurred in many stands through the district.
1972-1973	Varying degrees of infection recurred in many stands through the district.
1974	A low incidence of this disease was found at several widely separated locations.
1975-1978	not reported
1979-1980	Surveys conducted through the district revealed that, although the disease was present in most stands, little damage could be found.

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet

Host(s): ′ pine [Major]

Year	Remarks
1950-1965	not reported
1966	An intensive survey for this disease revealed a pocket of infection in French Twp. Examination of small red pine trees at two points in the township revealed that the incidence of infection was 90% and cumulative mortality reached 16%. Infection was also present on jack pine trees in the area.
1967	Extensive surveys did not reveal any change in the distribution of this disease over the previous year.
1968	Heavy infection of red pine and jack pine persisted in French Twp. Light tree mortality was evident in the area.
1969	Infection continued in French Twp.

(cont'd)

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet (concl.)

Year	Remarks
1970	Surveys of numerous red pine and jack pine plantations through the district revealed a low incidence of infection in a red pine plantation in Bastedo Twp.
1971	Annual surveys for this disease revealed damage in a red pine plantation in Boulter Twp. A high incidence of infection occurred in a red pine plantation in French Twp, where the pathogen has persisted for several years.
1972	A high incidence of infection recurred in French Twp.
1973	not reported
1974	Surveys revealed a high incidence of infection in French and Boulter twps.
1975-1978	not reported
1979	Infected red pine plantations were found in Phelps and Field twps. Surveys revealed an incidence of 80% infection in each plantation.
1980	Current damage was low in Phelps and Boulter twps.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller

Host(s): poplar [Major]

Year	Remarks
1950-1952	not reported
1953	Surveys for this pathogen revealed affected trees in many stands through the district.
1954	No change in the incidence of this disease could be determined over the previous year.

(cont'd)

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller (concl.)

Year	Remarks
1955	This canker was recorded in numerous stands. A quantitative sample revealed an incidence of 31% infection in a stand in Boulter Twp.
1956-1961	not reported
1962	Common in most aspen stands throughout the district.
1963	Considerable amounts of mortality were observed in numerous aspen stands.
1964	This disease continued to infect many aspen stands through the district. Quantitative sampling in Dana, Pardo and Boulter twps revealed an average incidence of 21% infection in the stands examined.
1965-1967	No change in the status of this disease could be determined over the previous year.
1968	This canker continued to infect and cause tree mortality in many stands. Surveys revealed an incidence of 70% infection in one stand in Bastedo Twp.
1969	Widespread branch and stem cankering was observed in many stands.
1970	not reported
1971	The disease continued to cause tree mortality in most aspen stands in the district.
1972	not reported
1973	Continuing surveys revealed that, in 1973, more than 25% of the trees were infected in numerous stands.
1974-1978	not reported
1979	Surveys conducted through the district showed an incidence of 1-5% infection in semimature aspen stands. Varying degrees of tree mortality were noted in stands examined.
1980	not reported

Needle Cast, *Lophodermium pinastri* (Schrad. ex Hook) Chev.

Host(s): pine [Minor]

Year	Remarks
1950-1956	not reported
1957	Widespread, severe foliar damage was observed on white pine trees.
1958-1966	not reported
1967	Light damage was observed in numerous jack pine stands through the southern and central parts of the district.
1968-1972	not reported
1973	Heavy foliar damage was observed on red pine trees at scattered locations in the district.
1974-1978	not reported
1979	Trace damage was observed at widely separated points.
1980	not reported

Shoot Blight, *Venturia macularis* (Fr.) Müller & Arx

Host(s): aspen [Major]

Year	Remarks
1950-1961	not reported
1962	Regeneration trembling aspens were heavily infested at scattered points.
1963	Although the incidence of infection decreased over the previous year, damage was observed at several points.
1964	Moderate-to-heavy infection occurred on reproduction trees throughout the central part of the district.

(cont'd)

Shoot Blight, *Venturia macularis* (Fr.) Müller & Arx (concl.)

Year	Remarks
1965-1966	Pockets of infection recurred in reproduction stands at numerous locations.
1967	Moderate-to-severe damage occurred in reproduction stands at several locations through the district.
1968-1972	not reported
1973-1976	Light damage was observed on small-diameter aspen trees at scattered locations through the district.
1977	An increase in the incidence of this pathogen was evident when infection was observed on a high percentage of the trees in reproduction stands at numerous locations.
1978-1980	not reported

Other Noteworthy Diseases

Pine Needle Rust, *Coleosporium asterum* (Diet.) Syd.

Host(s): pine [Major]

Year	Remarks
1950-1957	not reported
1958-1959	light damage on small trees at numerous locations
1960	Heavy infections occurred on understory trees at one location.
1961	not reported
1962	conspicuous damage and foliar loss in a young jack pine plantation in Merrick Twp
1963	heavy infection in a plantation in French Twp

(cont'd)

Pine Needle Rust, *Coleosporium asterum* (Diet.) Syd. (concl.)

Year	Remarks
1964	Light infection occurred in Merrick and French twps.
1965-1966	not reported
1967	light damage at one location in French Twp
1968-1973	not reported
1974	Severe infection occurred in a small plantation in Nipissing Twp.
1975-1980	not reported

Eutypella Canker, *Eutypella parasitica* Davidson and Lorenz

Host(s): sM [Major]

Year	Remarks
1950-1959	not reported
1960	Light damage was observed at one point in the district.
1961-1962	not reported
1963	Light damage was observed in Notman, Blyth and Merrick twps.
1964	Light tree mortality occurred at two locations.
1965-1972	not reported
1973	moderate cankering at several locations
1974-1980	not reported

Anthracnose Disease

Host(s): maple [Major]

Year	Remarks
1950-1963	not reported
1964	appreciable twig mortality at several points
1965	not reported
1966	damage at many locations throughout the district
1967-1980	not reported

Needle Cast, *Isthmiella crepidiformis* (Darker) Darker

Host(s): bS [Major]

Year	Remarks
1950-1969	not reported
1970	Light tree mortality caused by this pathogen was observed at one location.
1971	not reported
1972	Light damage occurred at scattered locations.
1973-1980	not reported

White Trunk Rot, *Phellinus igniarius* (Fr.) Quél. [Major]

Host(s): deciduous

Year	Remarks
1950-1953	not reported
1954-1955	diseased trees observed at numerous points
1956-1980	not reported

Red Ring Rot, *Phellinus pini* (Brot. ex Fr.) Ames

Host(s): conifers [Major]

Year	Remarks
1950-1953	not reported
1954-1957	found commonly in white pine stands
1958-1980	not reported

Shoot Blight, *Venturia populina* (Vuill.) Fabric.

Host(s): bPo [Major]

Year	Remarks
1950-1961	not reported
1962	light shoot damage observed in Widdifield Twp
1963	observed commonly on regeneration at numerous locations
1964	not reported
1965-1967	light shoot damage evident at numerous locations
1968-1978	not reported
1979	heavy terminal infection in Gibbons Twp
1980	not reported

ABIOTIC DAMAGE

Drought

Year	Remarks
1950-1952	not reported
1953	Premature leaf drop of deciduous species was evident on hills at several locations.
1954-1975	not reported
1976	Premature leaf discoloration and foliage drop in late August and early September were evident throughout the district; white and yellow birch growing on high sites suffered the most damage.
1977-1980	not reported

Frost

Year	Remarks
1950-1952	not reported
1953	A small area of severe damage to coniferous foliage was observed in Sisk Twp.
1954-1959	not reported
1960	Late spring frosts caused extensive damage to white spruce, balsam fir, Scots pine, black ash and balsam poplar at numerous locations.
1961-1963	not reported
1964-1965	Late, severe spring frosts caused extensive damage to conifers in low-lying areas; varying amounts of damage were also evident in ash and poplar stands at several points.
1966-1971	not reported
1972	Severe frost on 10 and 11 June caused heavy damage to coniferous and deciduous foliage at many points in the district.

(cont'd)

Frost (concl.)

Year	Remarks
1973-1976	not reported
1977	Low temperatures in June caused varying degrees of damage at numerous points. Small white spruce was heavily damaged at many locations in Crerar Twp; 18% of the current foliage was damage.
1978-1979	not reported
1980	Frosts during the second week of June caused considerable damage throughout the district. Damage was most evident in young white spruce plantations, where moderate-to-severe damage occurred on 100% of the affected trees.

Needle Droop

Host(s): rP [Major]

Year	Remarks
1950-1965	not reported
1966-1967	occasional small red pine trees severely damaged in Springer Twp and at several other locations
1968-1974	not reported
1975	Up to 11% of the trees were affected in plantations in Gibbons Twp.
1976-1980	not reported

Semi-mature Tissue Needle Blight

Host(s): wP [Major]

Year	Remarks
1950-1971	not reported
1972	light foliar damage observed in the Mattawa area
1973	Trace foliar damage occurred at scattered points.
1974-1980	not reported

Snow

Year	Remarks
1950-1970	not reported
1971	Appreciable branch damage caused by snow burden was noted at many points in the district.
1972-1980	not reported

Wind

Year	Remarks
1950-1969	not reported
1970	On 20 August a severe windstorm swept across the district from the western boundary of the district to the Quebec border. The path of the storm was approximately 0.5 km wide and severe blowdown occurred in many areas.
1971-1972	not reported
1973	A pocket of broken and windthrown trees was observed in Janes Twp.
1974-1980	not reported

Winter Drying

Year	Remarks
1950-1958	not reported
1959-1960	Conspicuous damage to the foliage of small-diameter white pine, Scots pine, red pine and balsam fir trees was observed at many locations.
1961-1966	not reported
1967	Damage to the foliage of most conifers growing on exposed sites was evident at many locations. Small-diameter red and white pine trees suffered the most damage.
1968-1969	not reported
1970-1972	Unusually severe winter drying occurred on windbreaks and plantations of coniferous hosts at many locations.
1973-1976	not reported
1977	Light foliar damage was evident on red, Scots and jack pine at numerous locations in the district.
1978-1980	not reported

APPENDICES

APPENDIX A

DECIDUOUS HOST

Common Name	Scientific Name	Abbreviations
Alder	*Alnus* spp.	Al
Apple	*Malus* spp.	Ap
Ash, black	*Fraxinus nigra* Marsh.	As
Aspen, largetooth	*Populus grandidentata* Michx.	lA
trembling	*tremuloides* Michx.	tA
Basswood	*Tilia* spp.	Ba
Beech	*Fagus grandifolia* Ehrh.	Be
Birch, white	*Betula papyrifera* Marsh.	wB
yellow	*alleghaniensis* Britt.	yB
Butternut	*Juglans cinerea* L.	Bu
Cherry, eastern choke	*Prunus virginiana* L.	eaCh
pin	*pensylvanica* L.f.	pCh
Elm, white	*Ulmus americana* L.	wE
Horse-chestnut	*Aesculus hippocastanum* L.	hChe
Ironwood	*Ostrya* spp.	I
Maple, Manitoba	*Acer negundo* L.	mM
red	*rubrum* L.	rM
sugar	*saccharum* Marsh.	sM
Mountain-ash, American	*Sorbus americana* Marsh.	aMo
Oak, bur	*Quercus macrocarpa* Michx.	bO
red	*rubra L.*	rO
Poplar, balsam	*Populus balsamifera* L.	bPo
Carolina	*eugenei* Simon-Louis	cPo
Lombardy	*nigra* L.	lPo
silver	*alba* L.	sPo
Willow	*Salix* spp.	W

APPENDIX B

CONIFEROUS HOST

Common Name	Scientific Name	Abbreviation
Cedar, eastern white	*Thuja occidentalis* L.	eC
Fir, balsam	*Abies balsamea* (L.) Mill.	bF
Larch	*Larix laricina* (Du Roi) K. Koch	tL
Pine, Austrian	*Pinus nigra* Arn.	aP
eastern white	*strobus* L.	wP
jack	*banksiana* Lamb.	jP
mugho	*mugho* Turra	mP
red	*resinosa* Ait.	rP
Scots	*sylvestris* L.	scP
Spruce, black	*Picea mariana* (Mill.) B.S.P.	bS
Colorado	*pungens* Engelm.	colS
Norway	*abies* (L.) Karst.	nS
red	*rubens* Sarg.	rS
white	*glauca* (Moench) Voss	wS

APPENDIX C

MAPS - NORTHEASTERN ONTARIO

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Birch Skeletonizer

Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1961

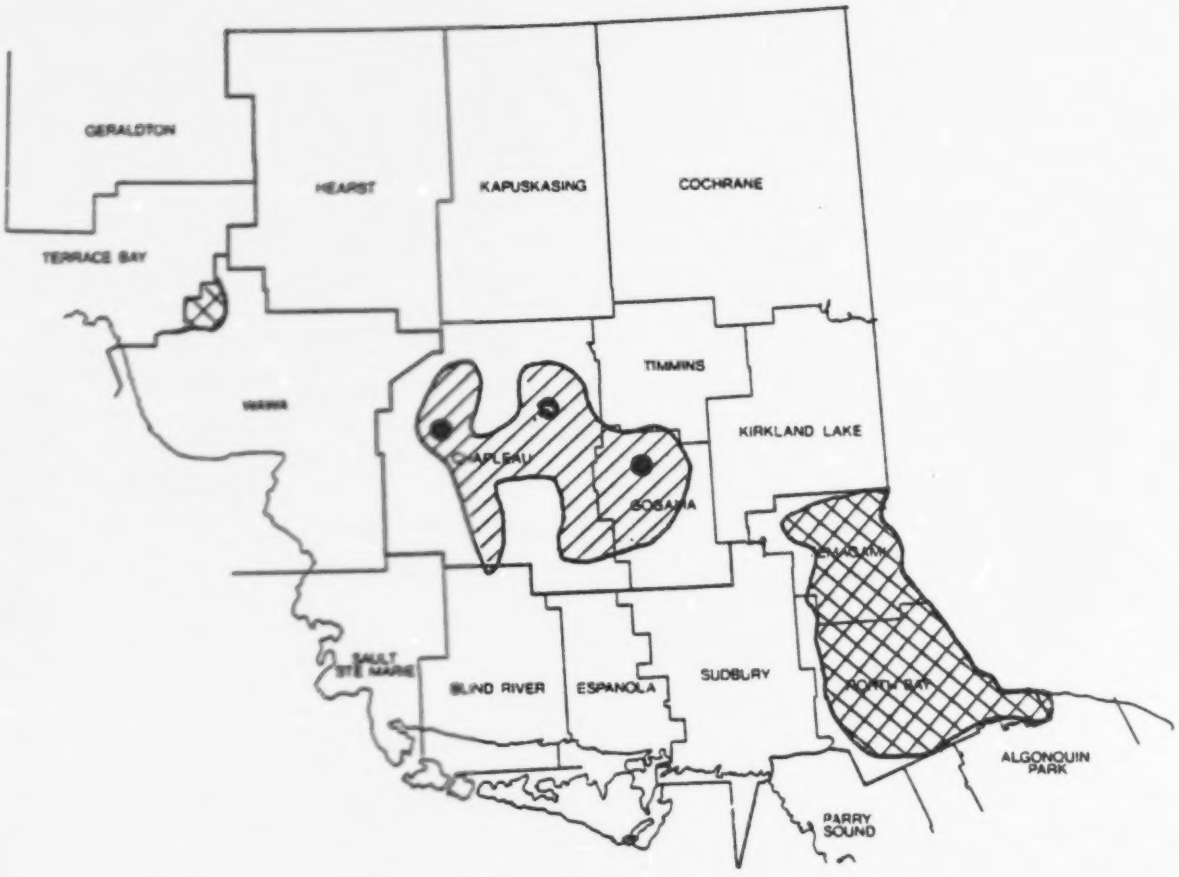
LEGEND

Moderate-to-severe defoliation

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Birch Skeletonizer

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1970

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1971

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1972

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1973

0 Miles 60

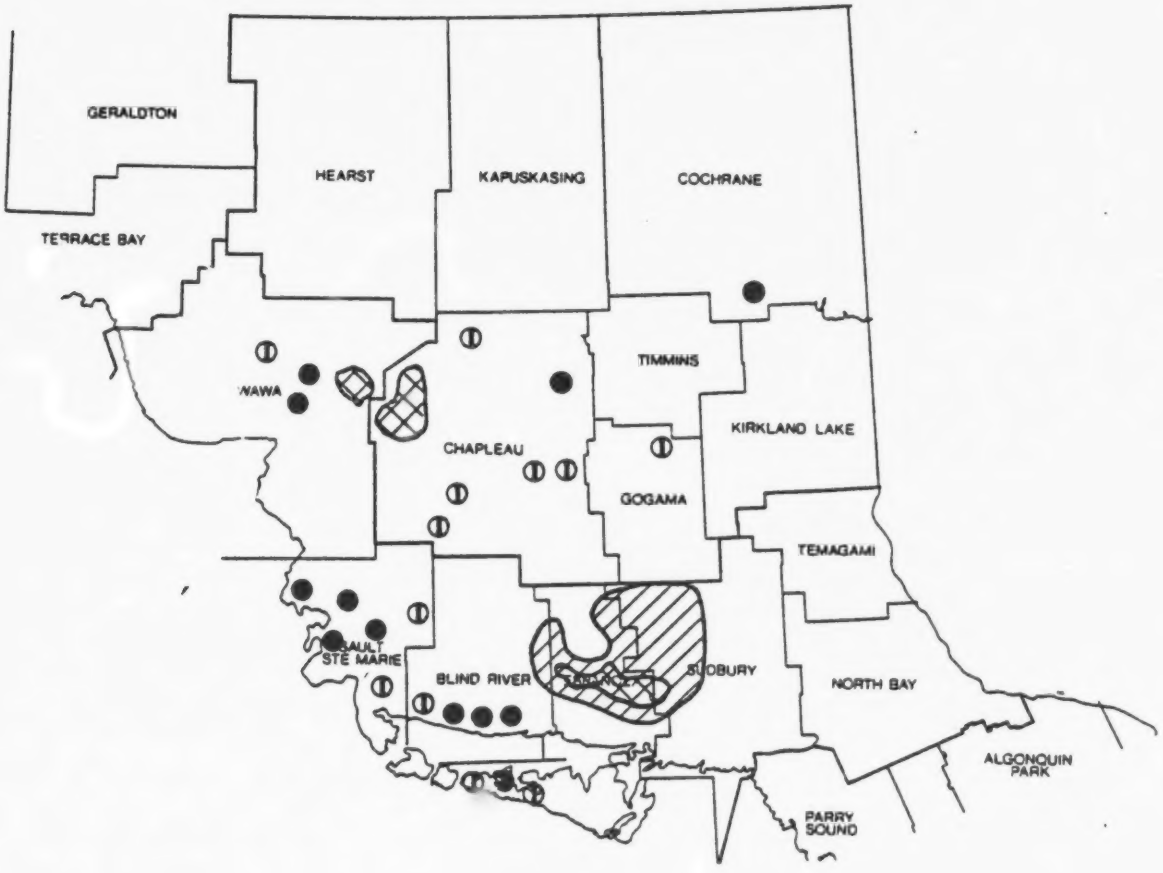
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1957

0 Miles 60

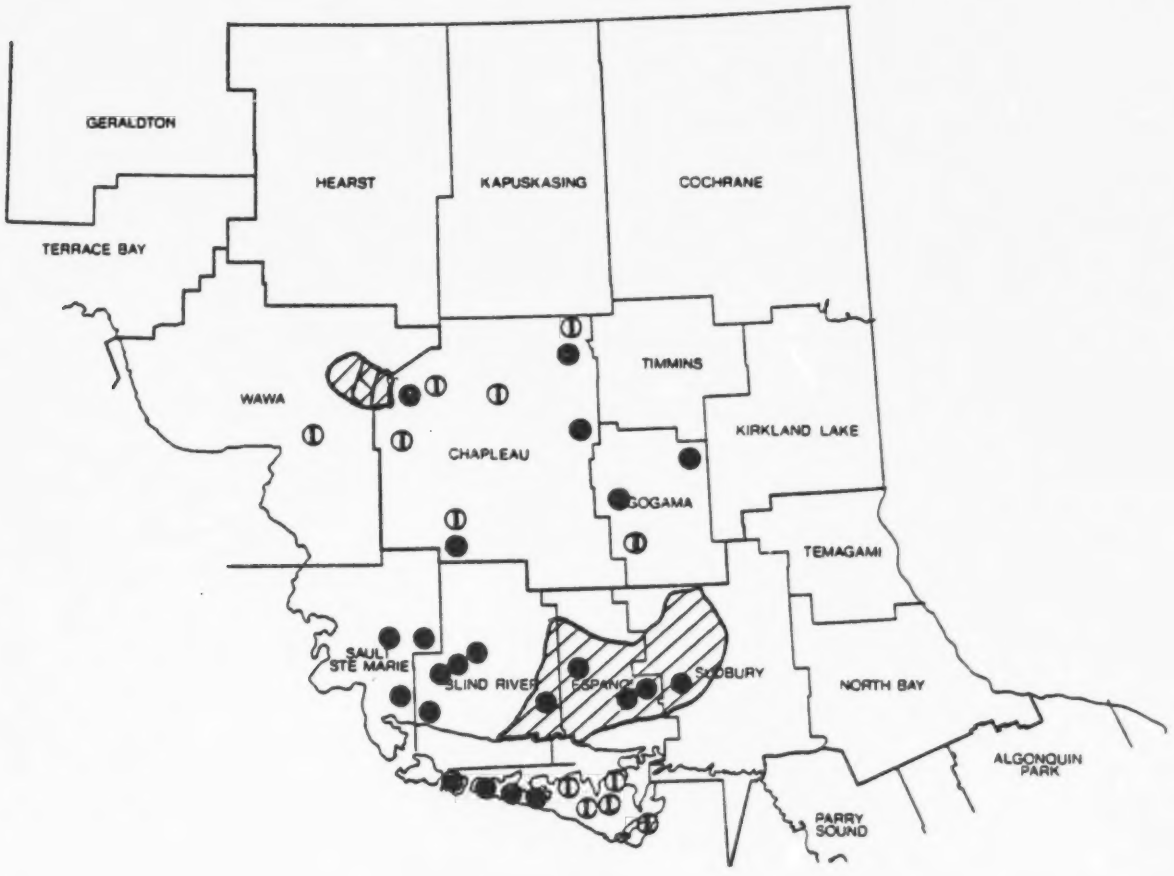
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1958

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

Large Aspen Tortrix

Areas within which defoliation occurred in 1959

0 Miles 60

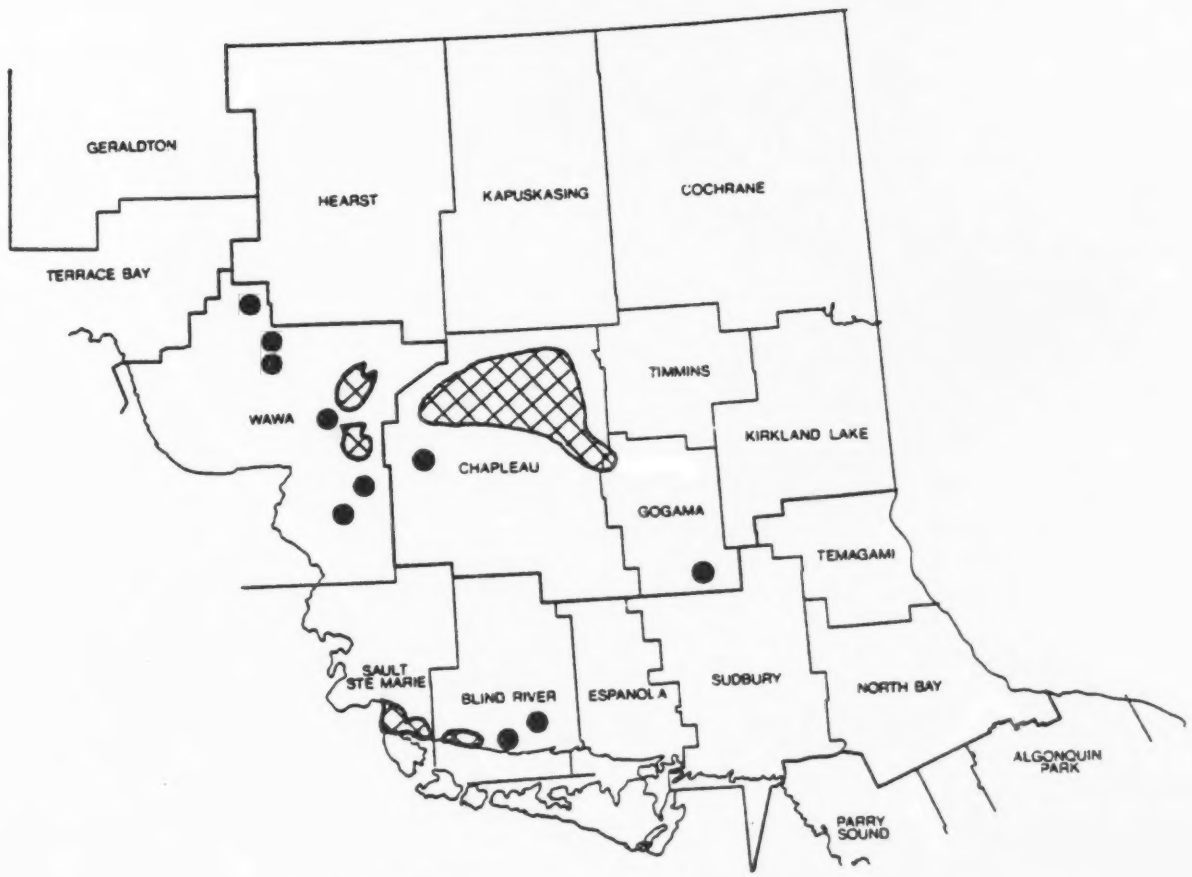
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

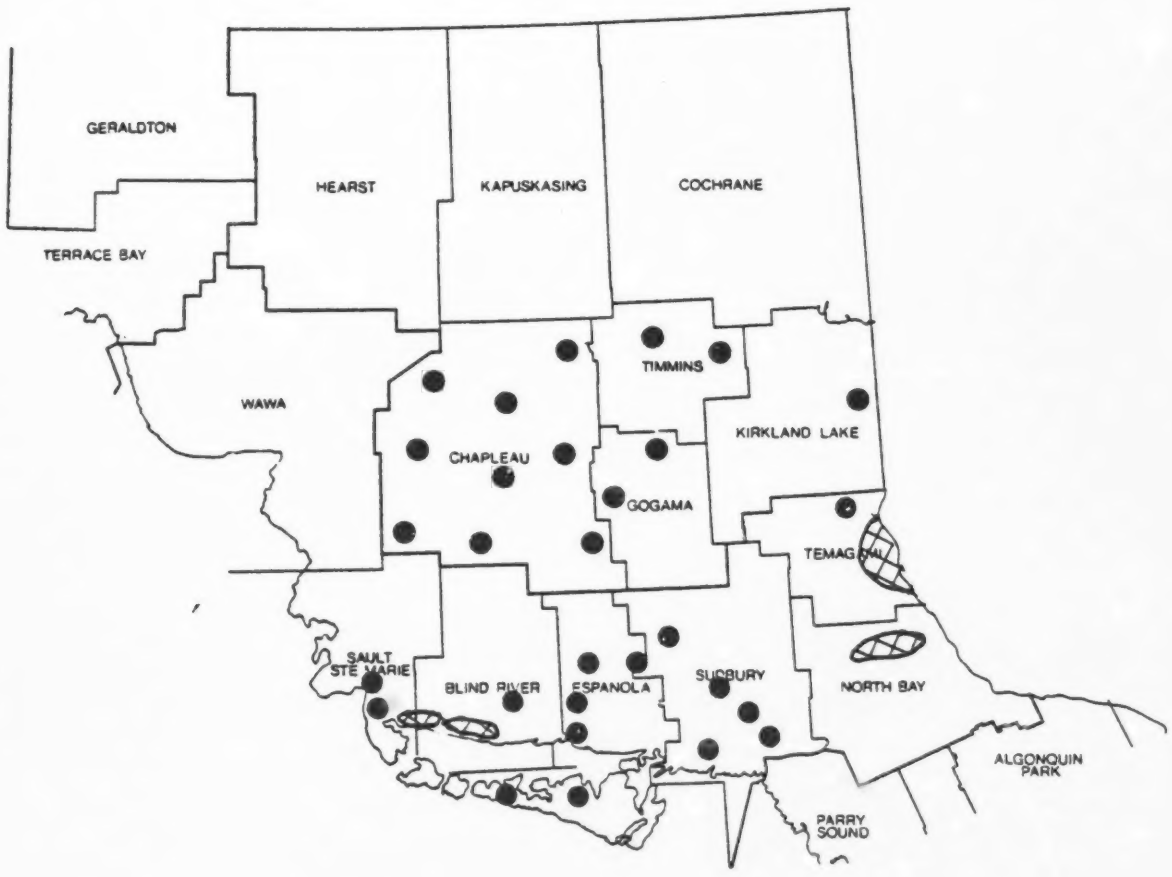
Large Aspen Tortrix

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1971

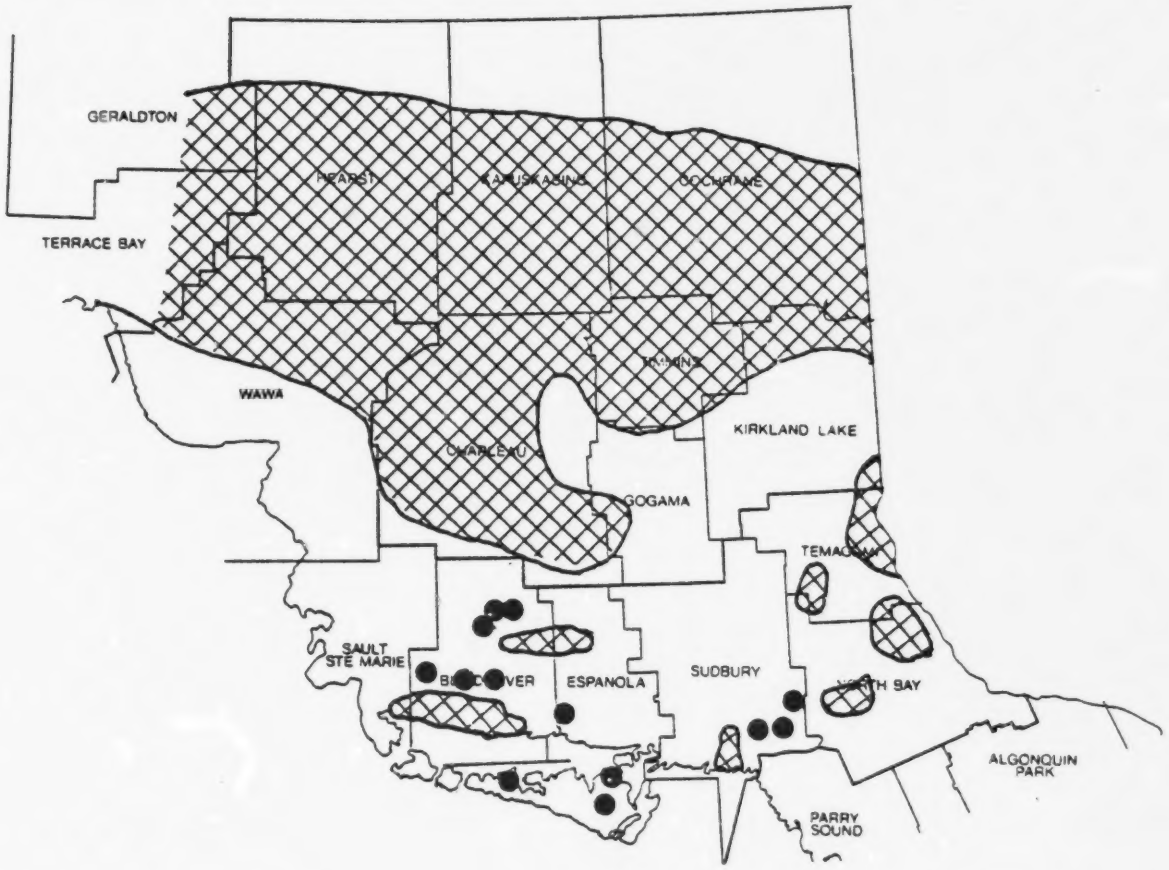
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1972

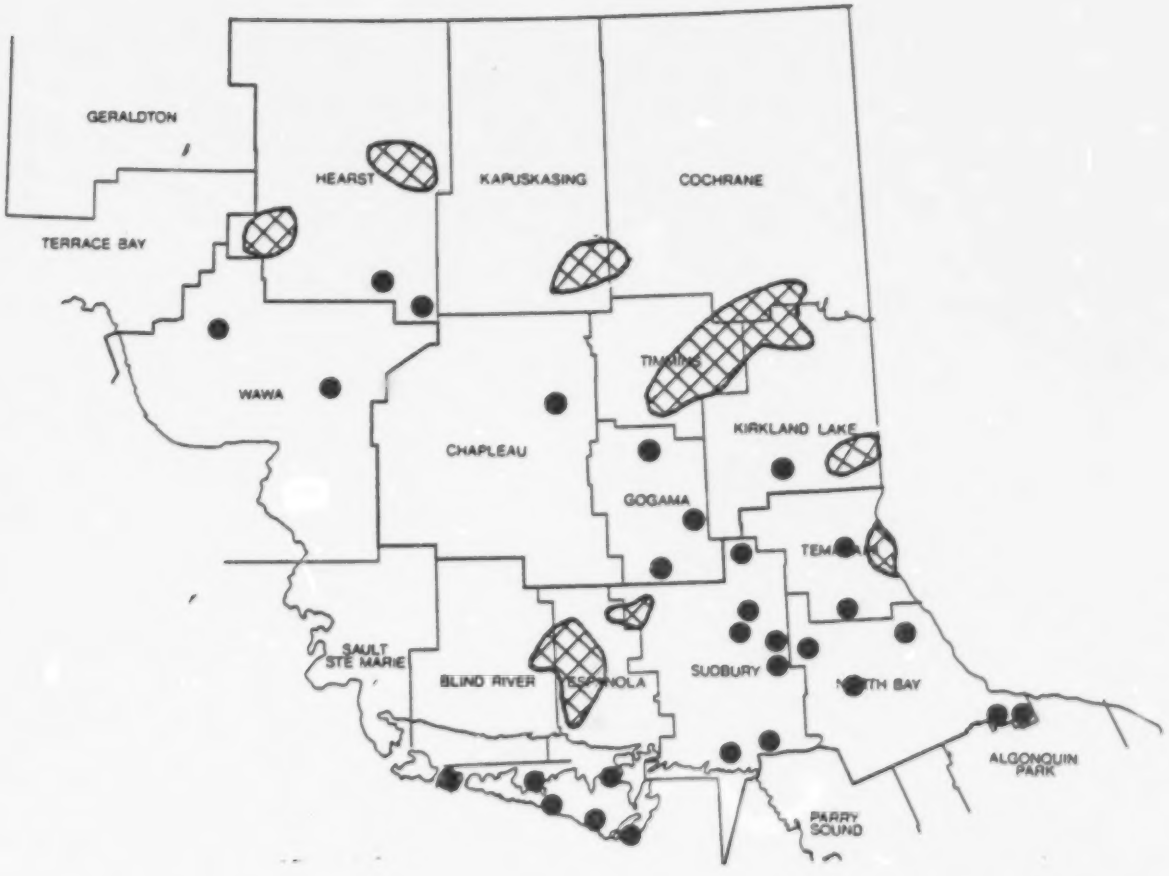
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1973

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Large Aspen Tortrix

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Large Aspen Tortrix

Areas within which defoliation occurred in 1975

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1950

0 Miles 60

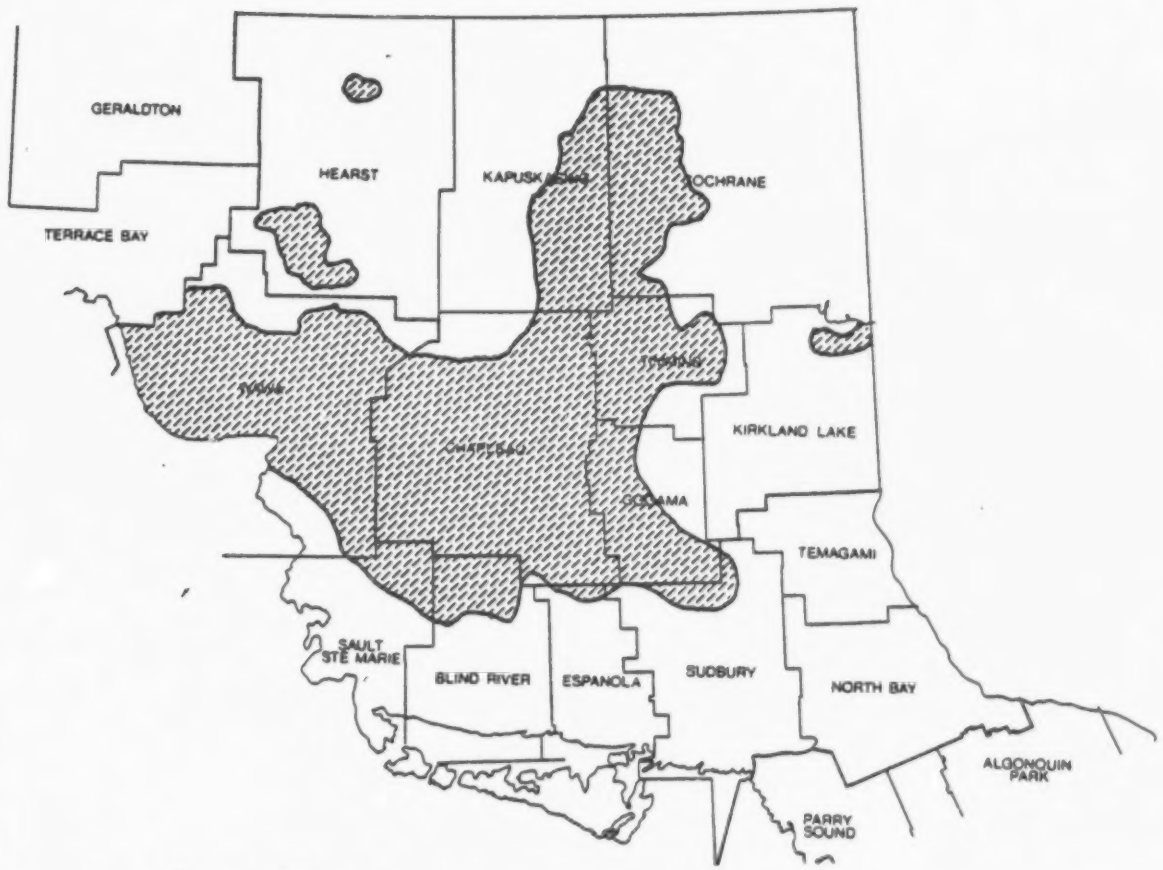
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1950

0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1951

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1953

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1954

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ①

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ① or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

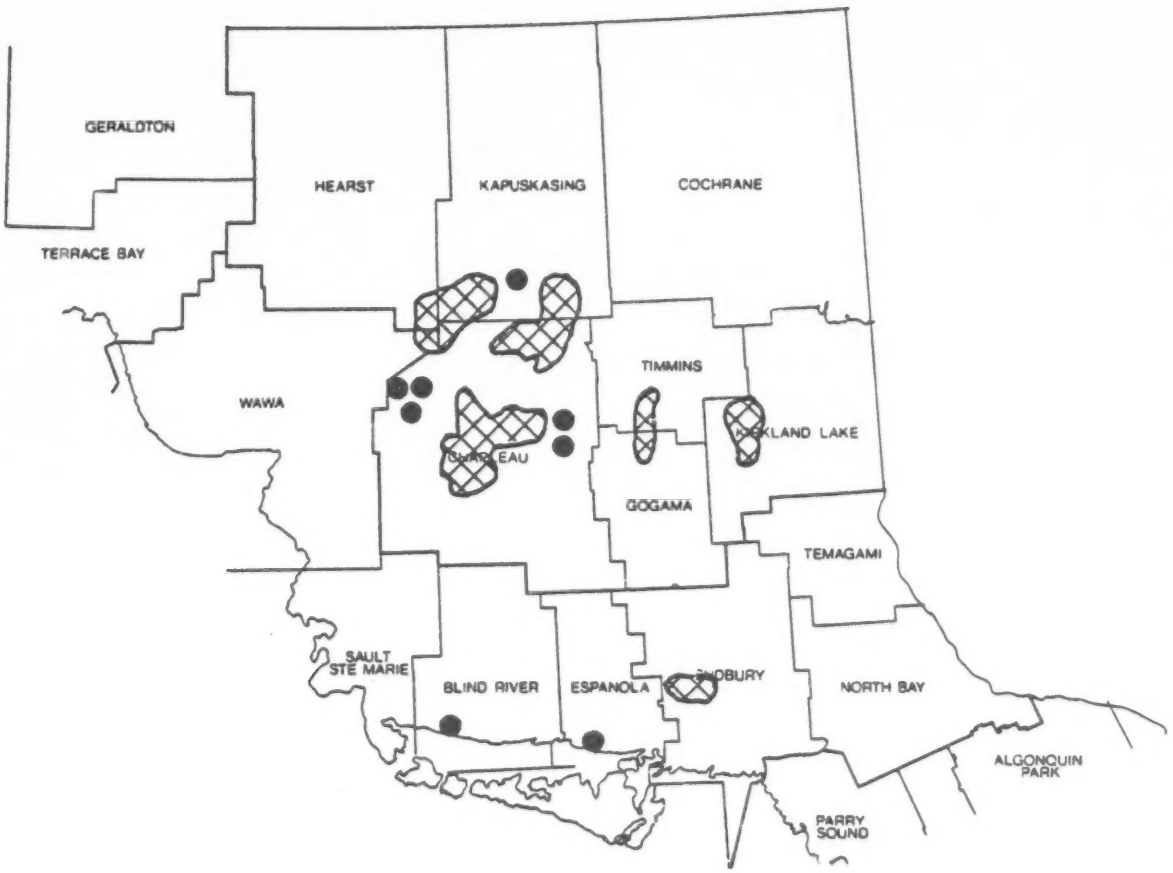
Spruce Budworm

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

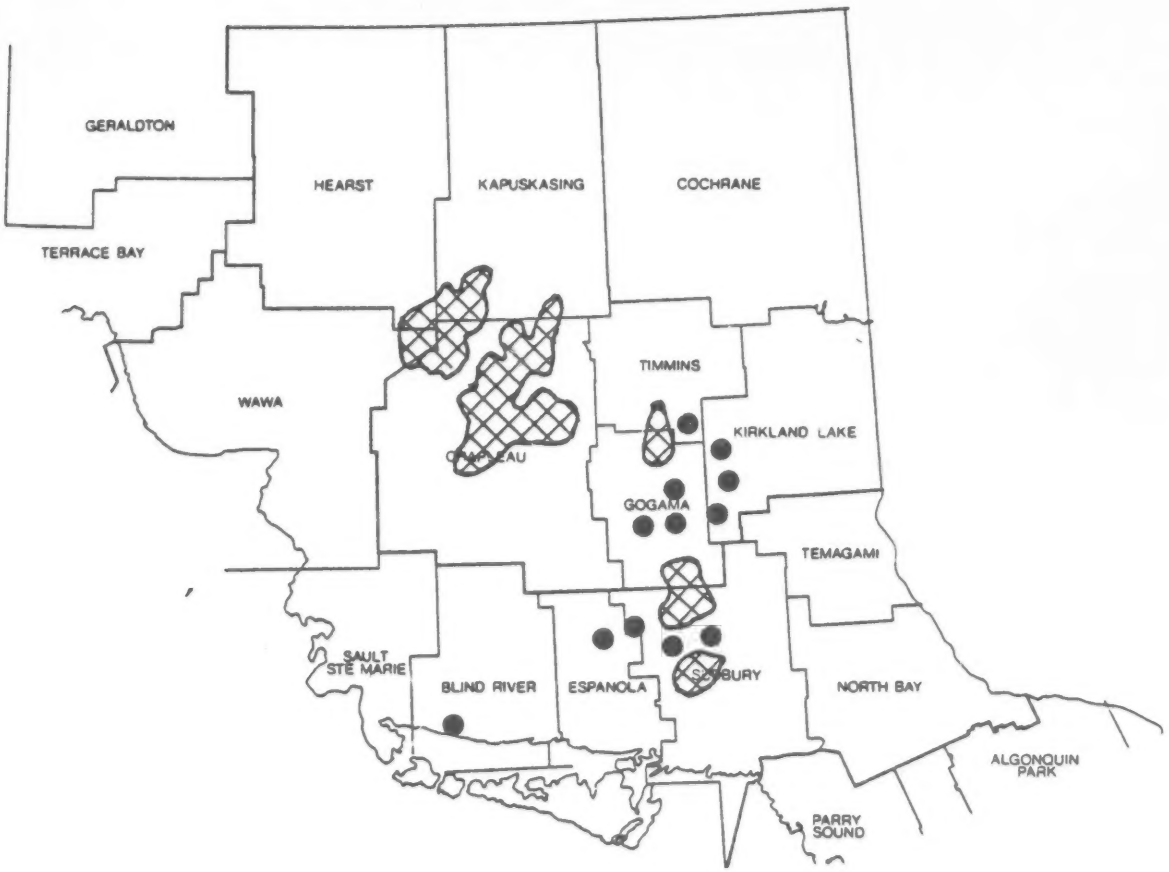
Spruce Budworm

Areas within which defoliation occurred in 1968

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

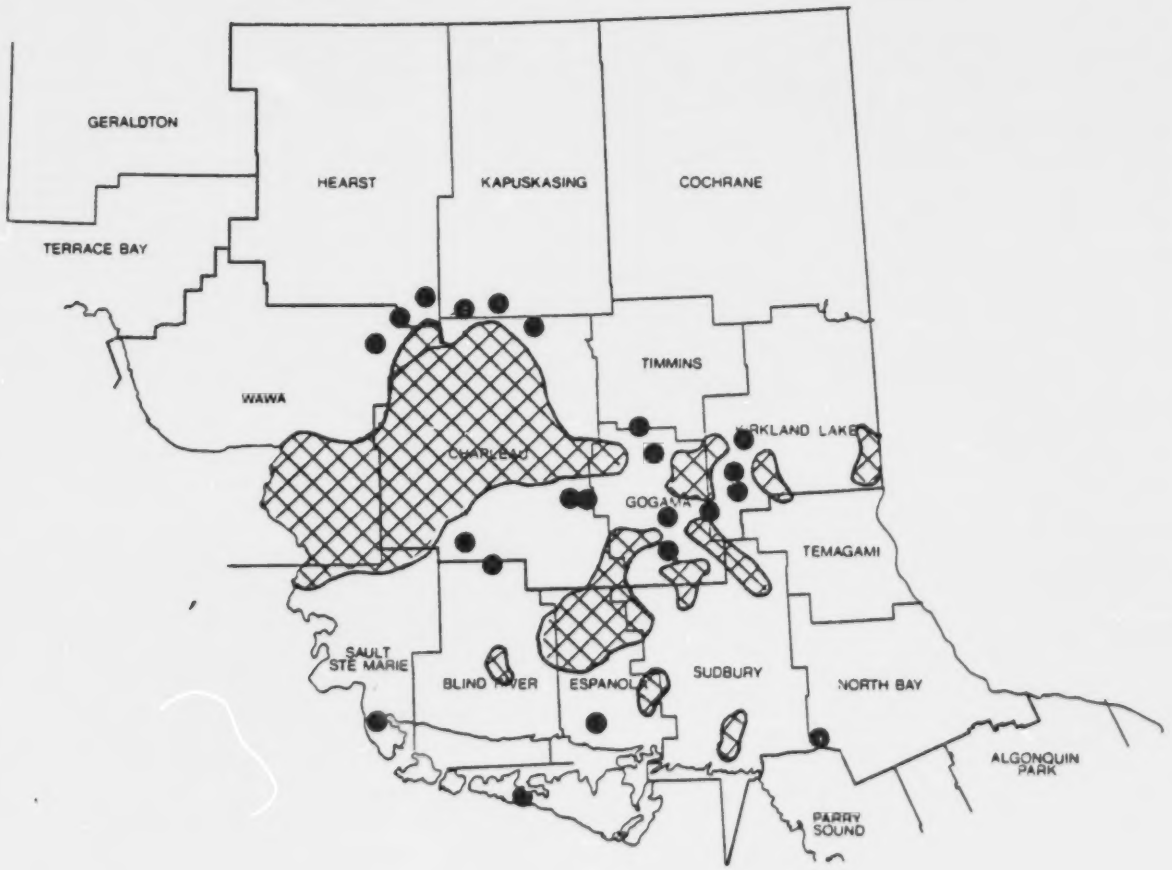
Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

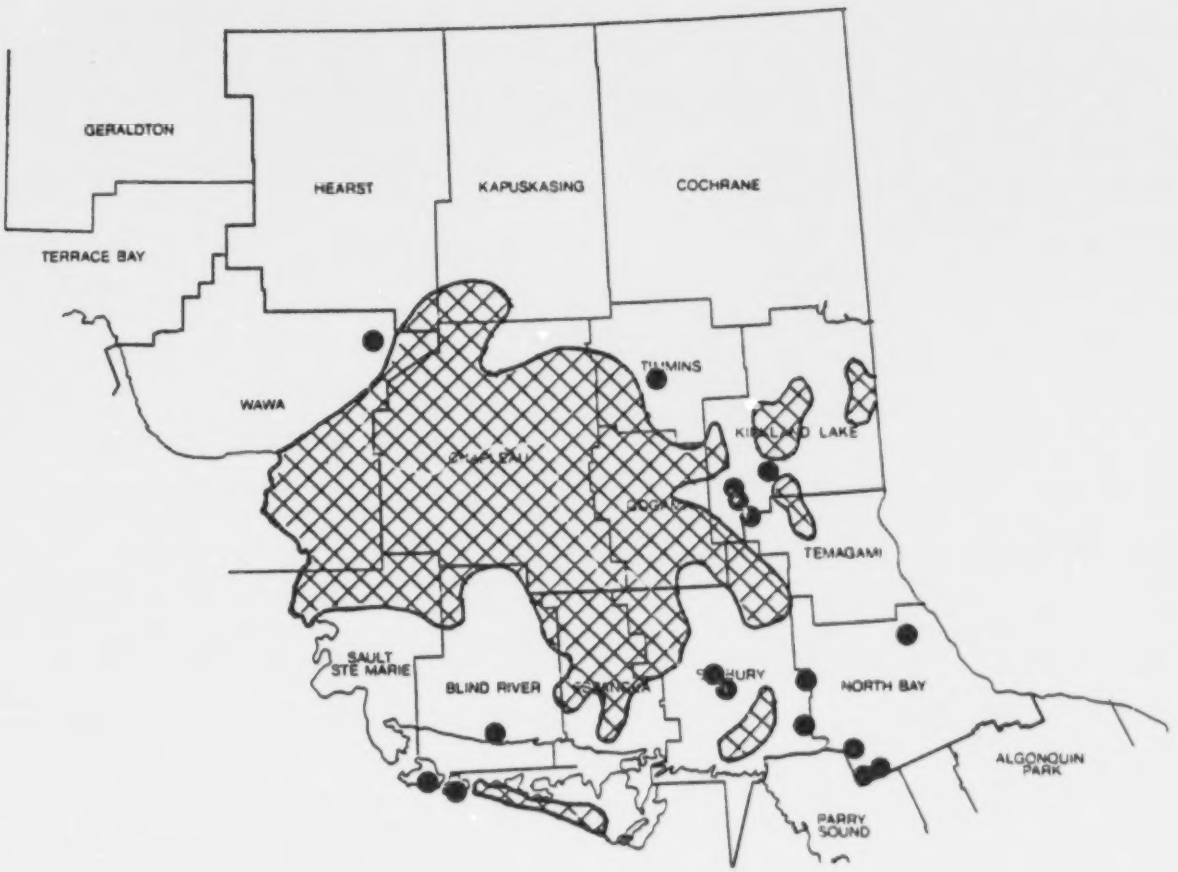
Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

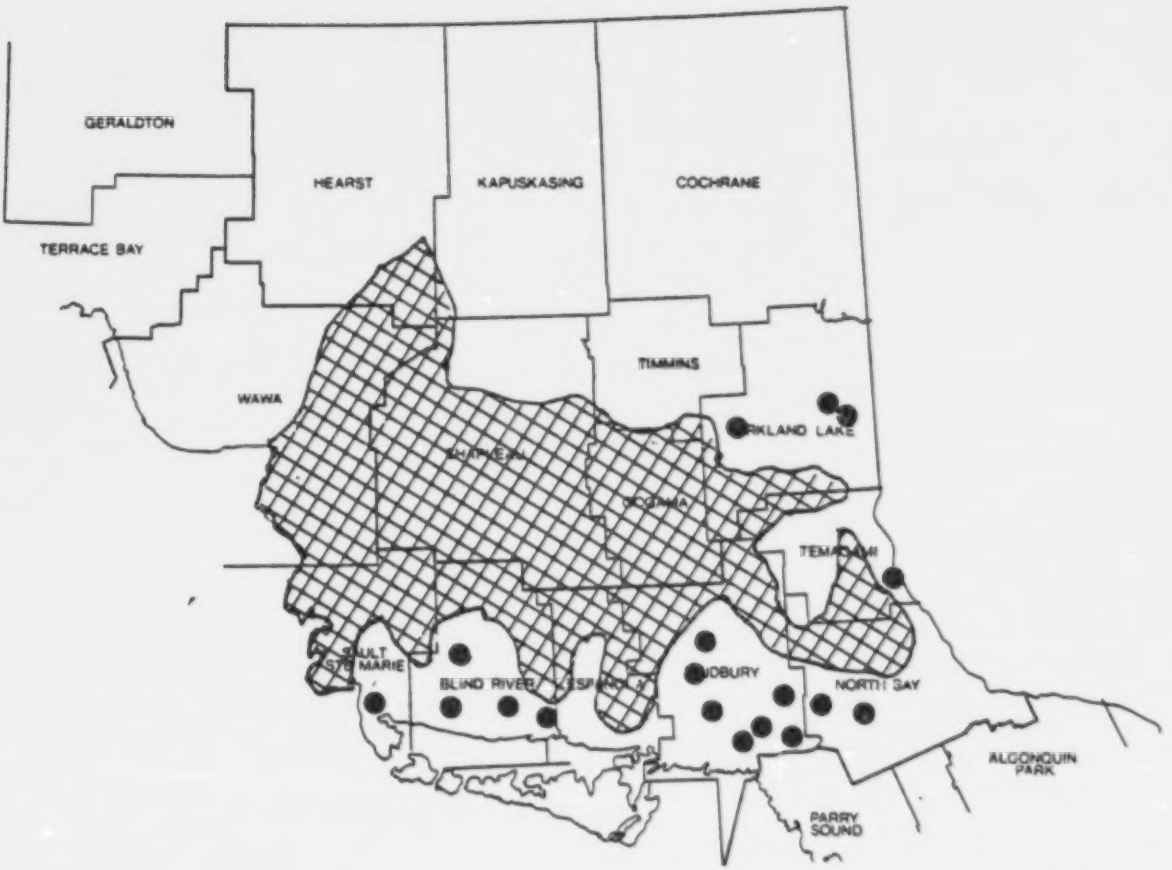
Spruce Budworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

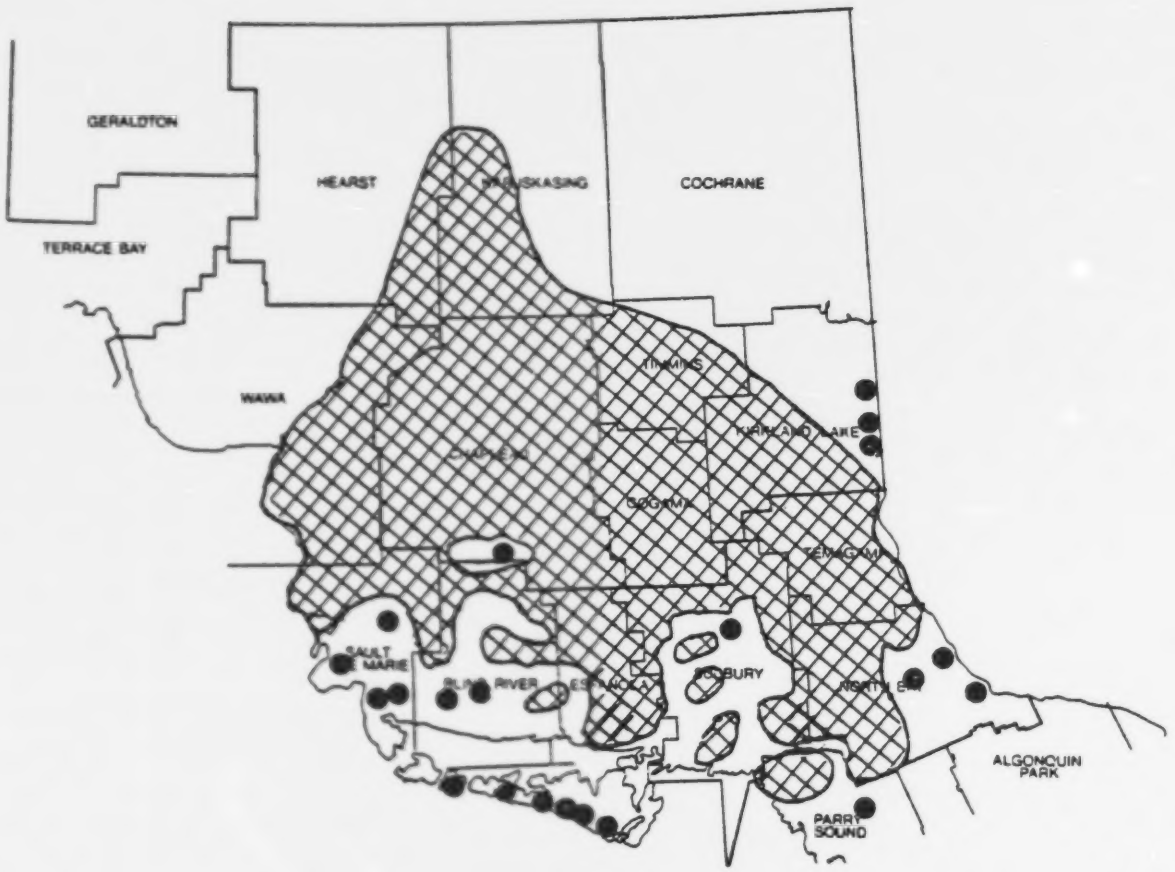
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1974

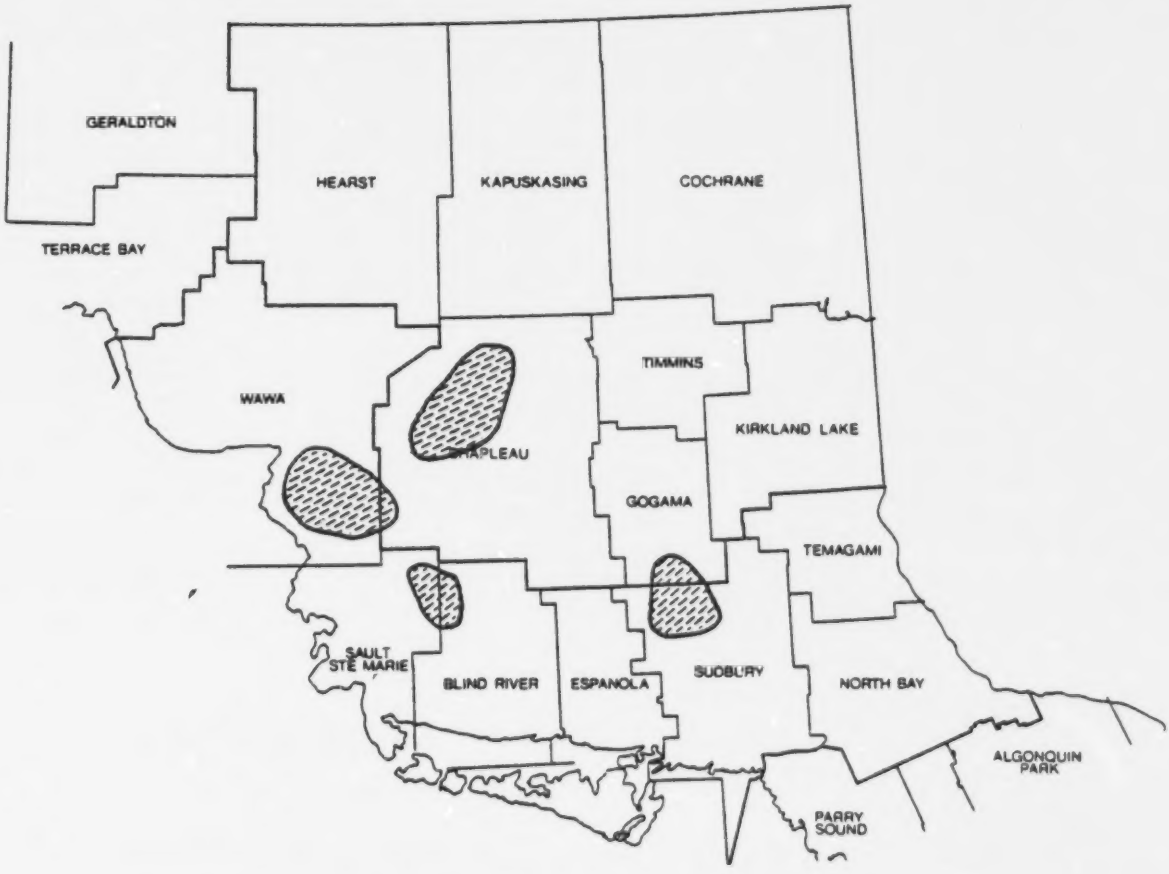
LEGEND

Moderate-to-severe defoliation ● or ▨

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1974

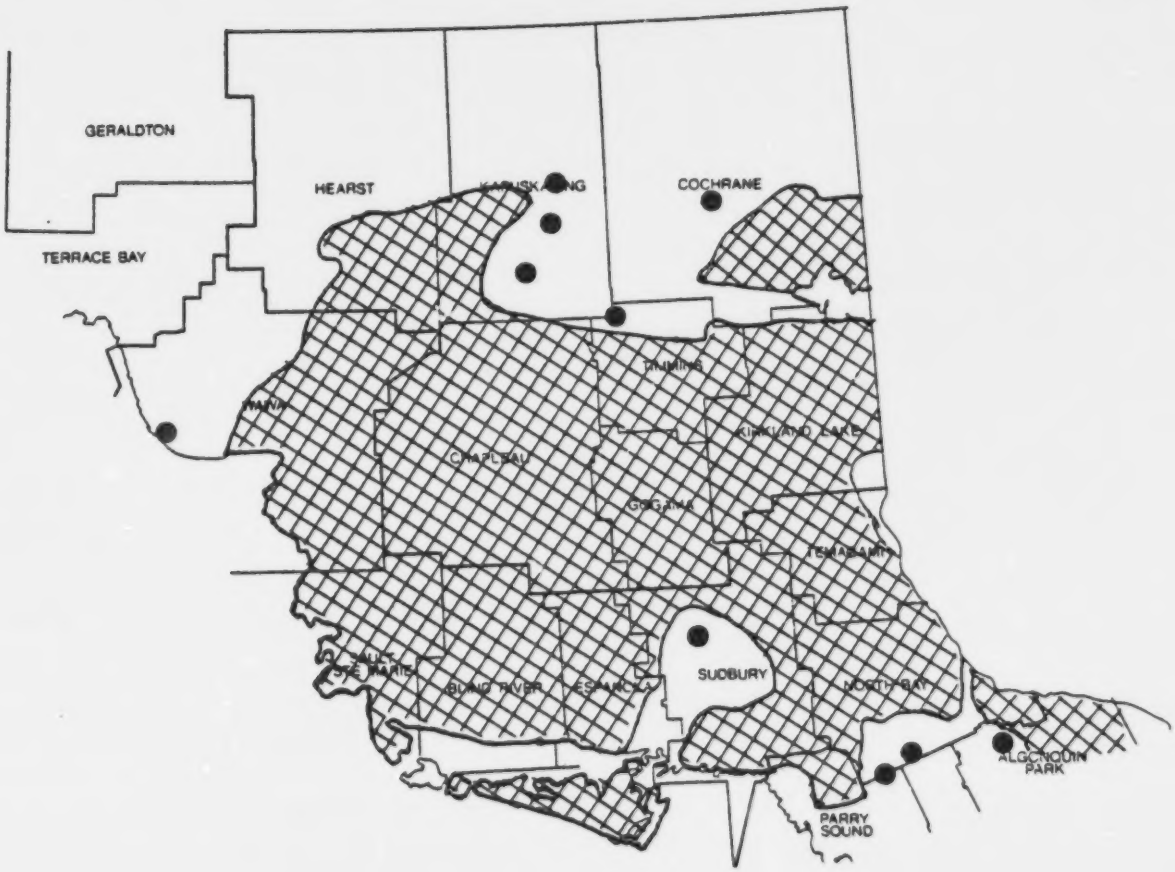
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

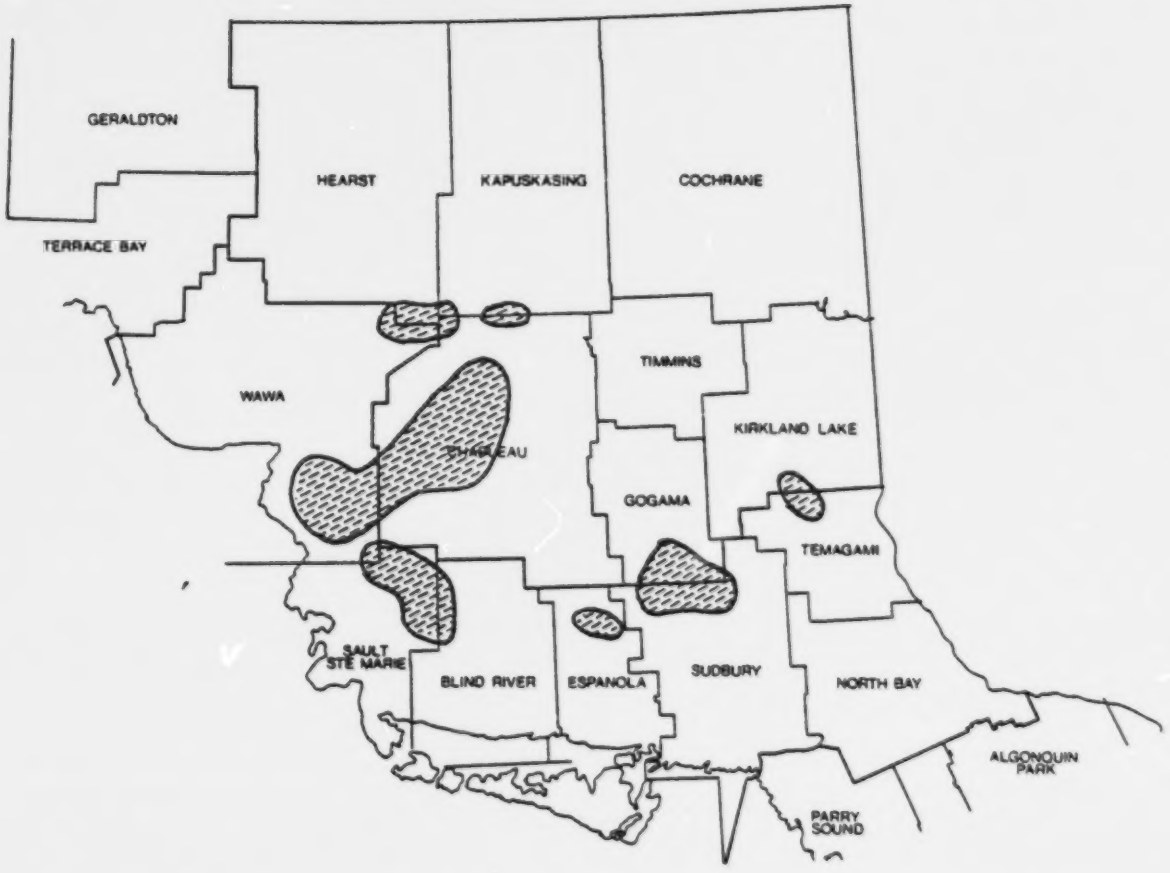
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1975

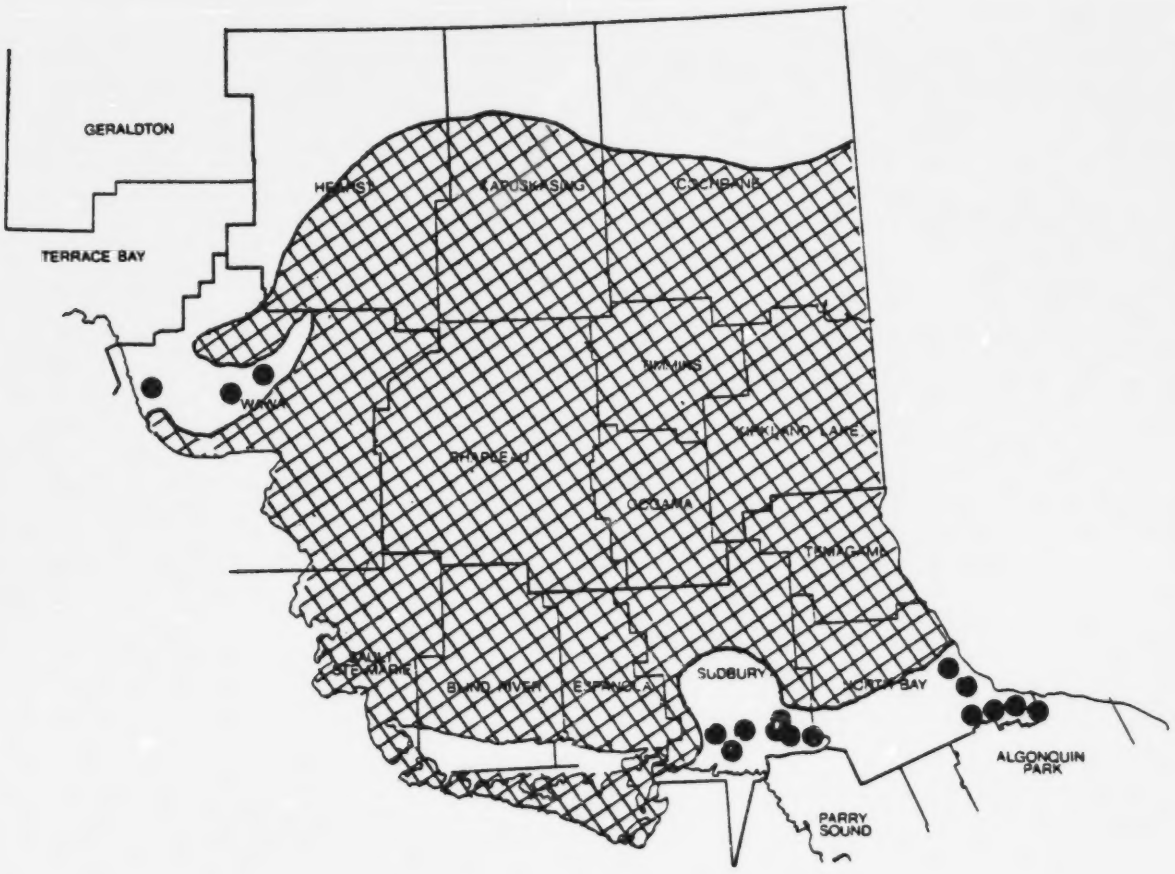
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1976

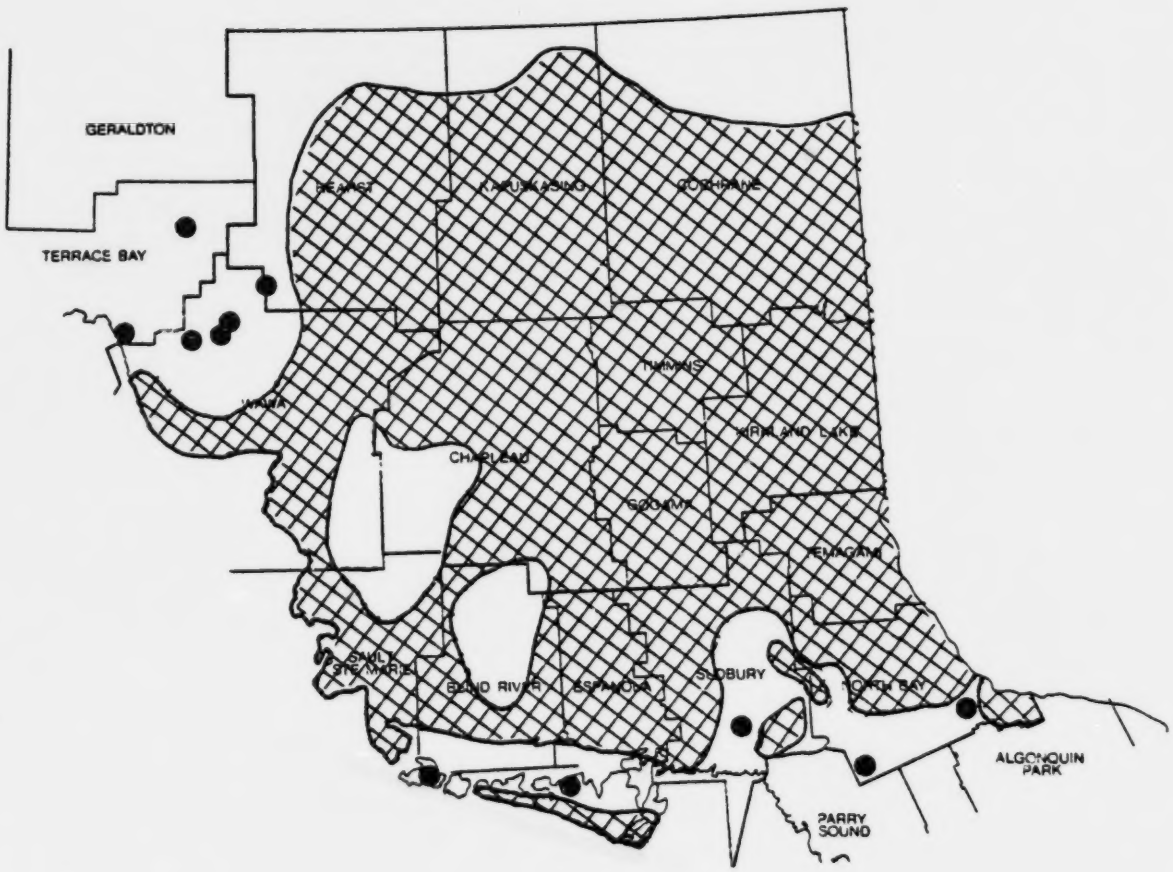
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

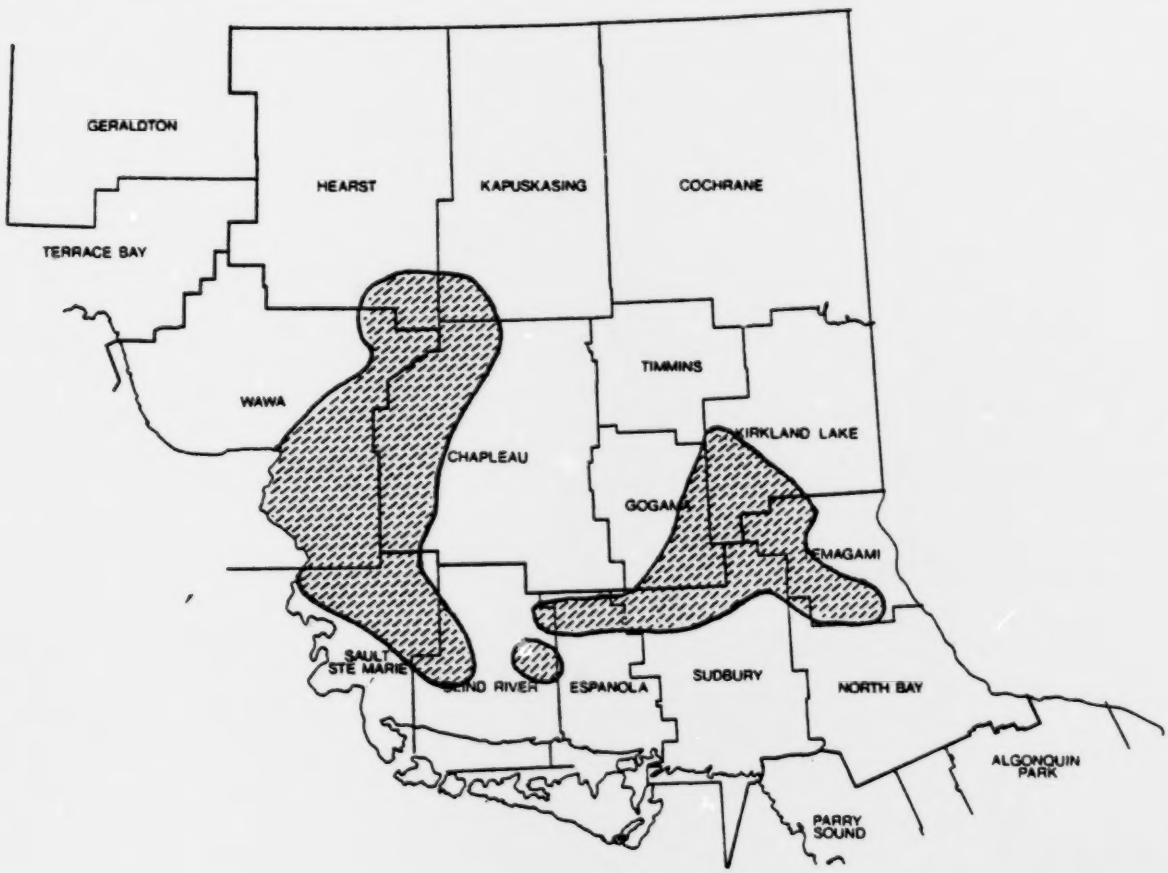
Spruce Budworm

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1977

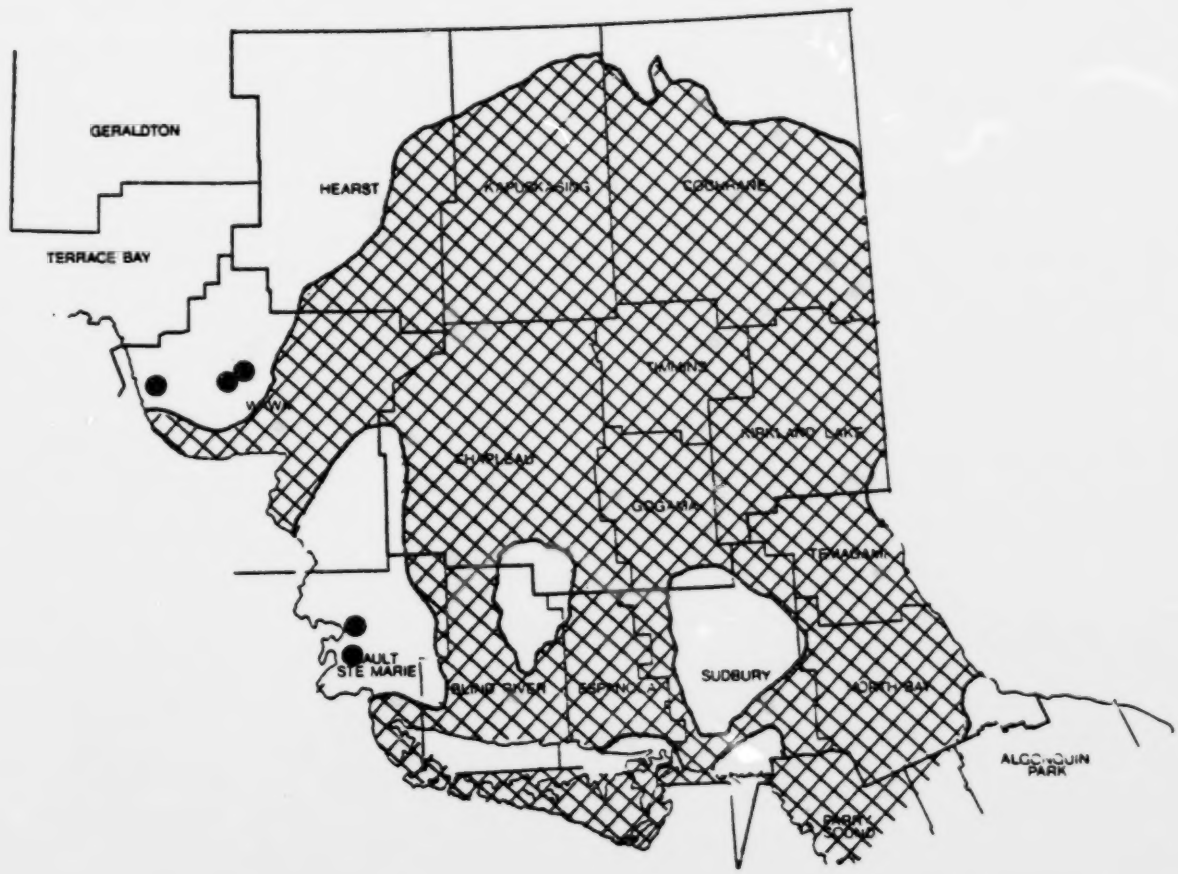
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

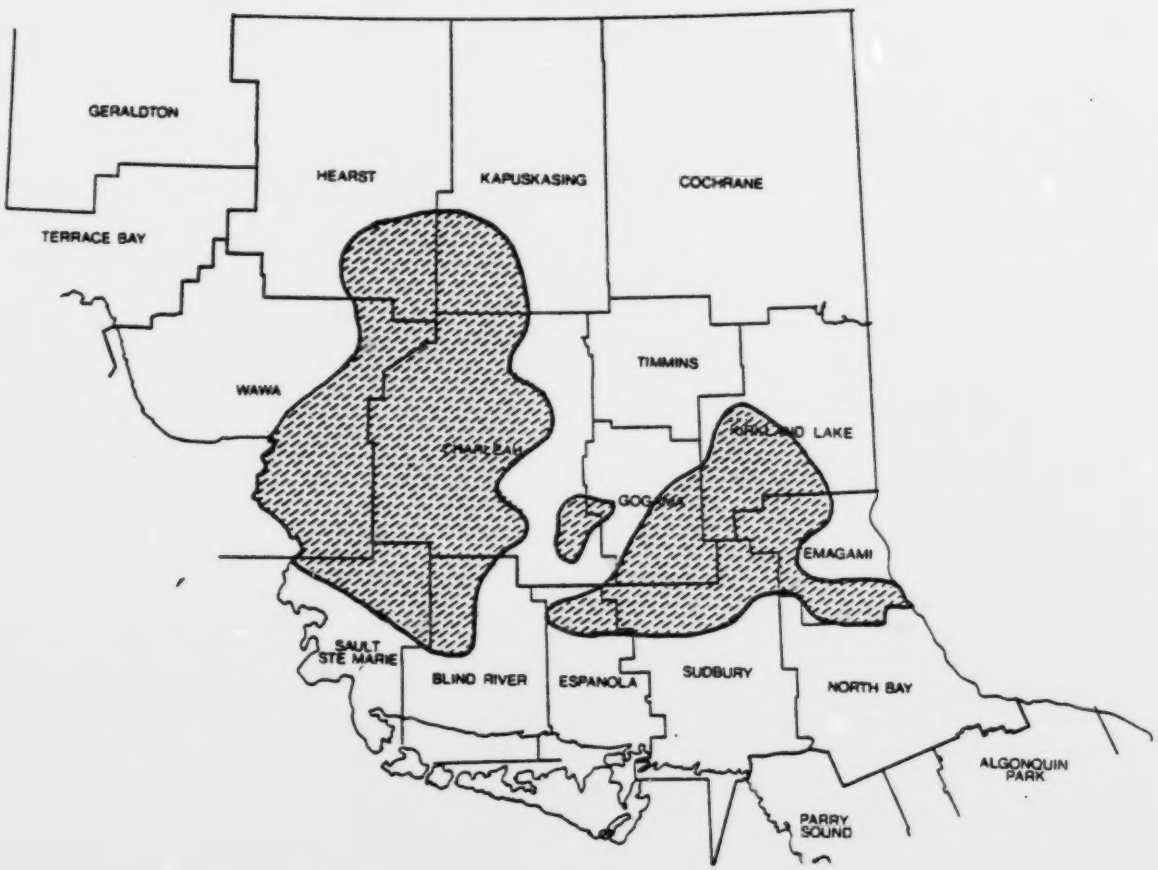
Spruce Budworm

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1978

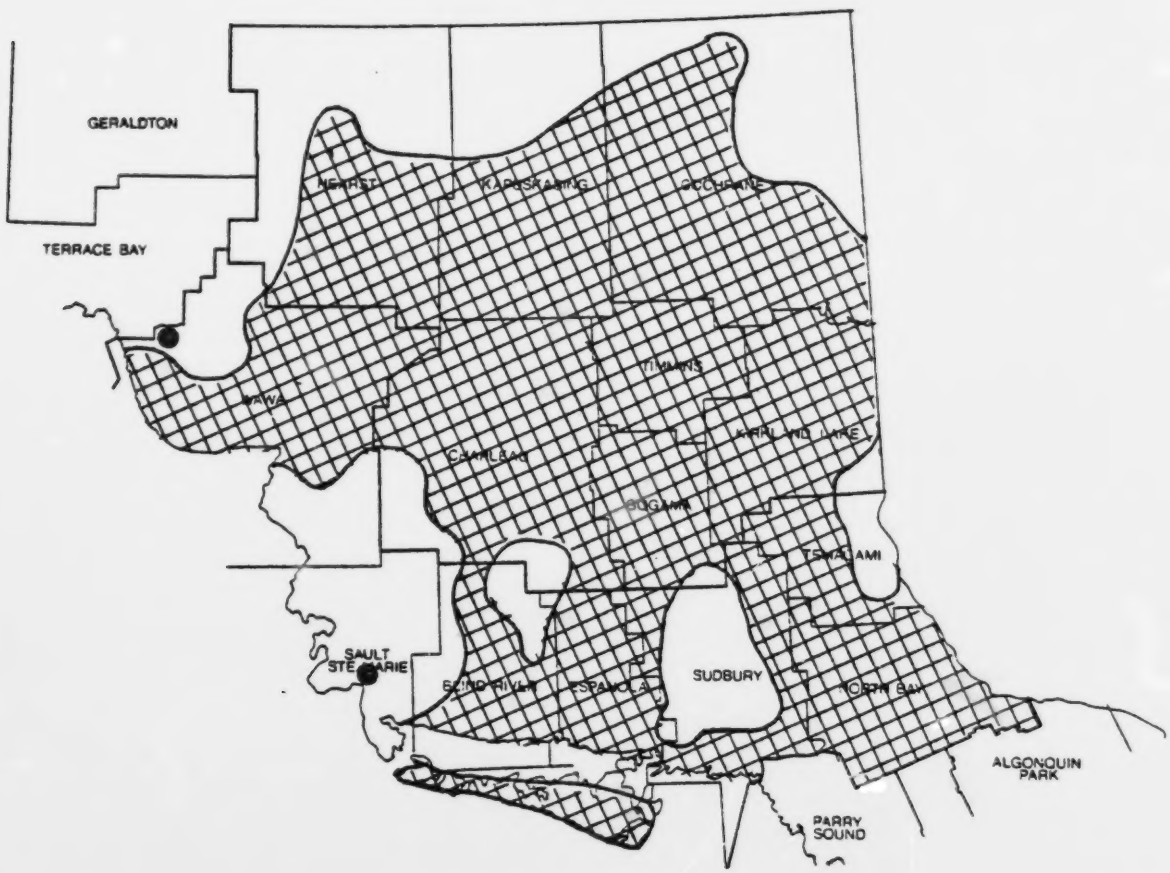
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

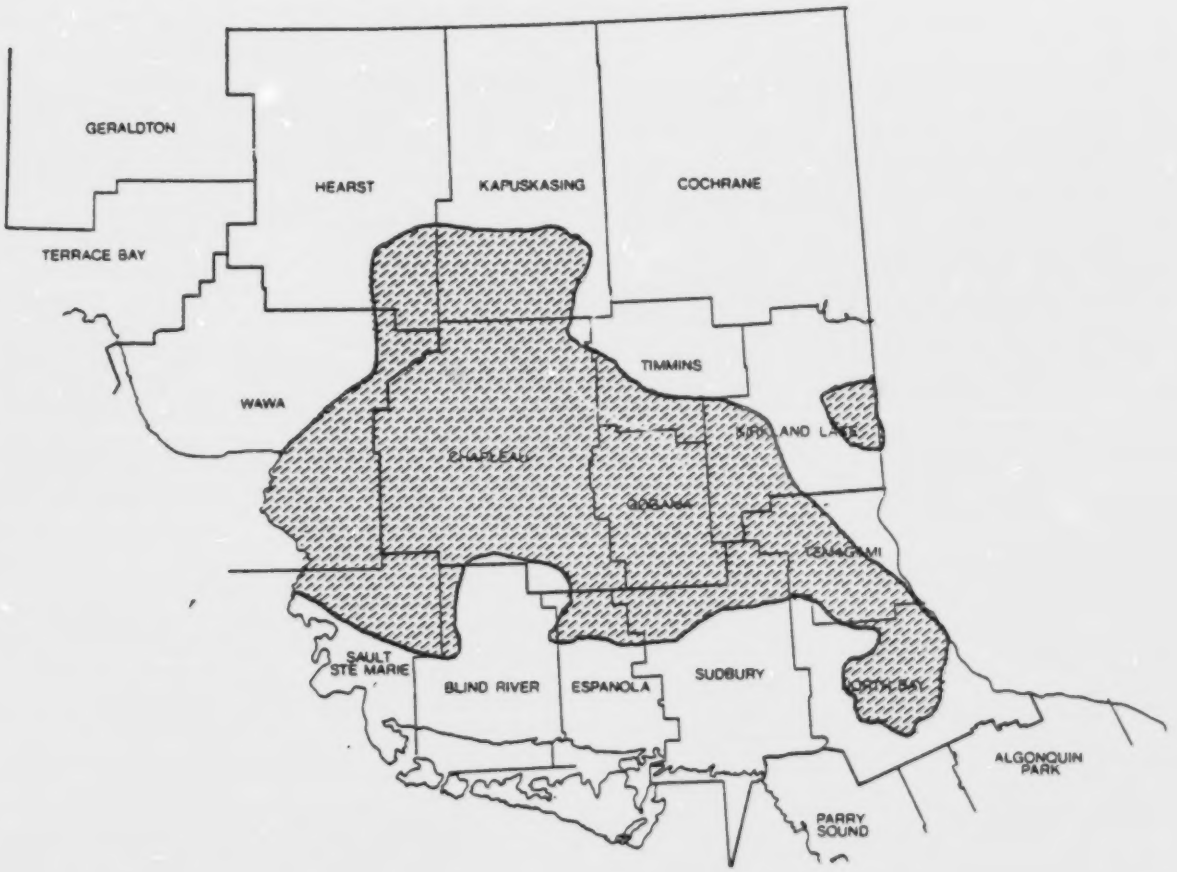
Spruce Budworm

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

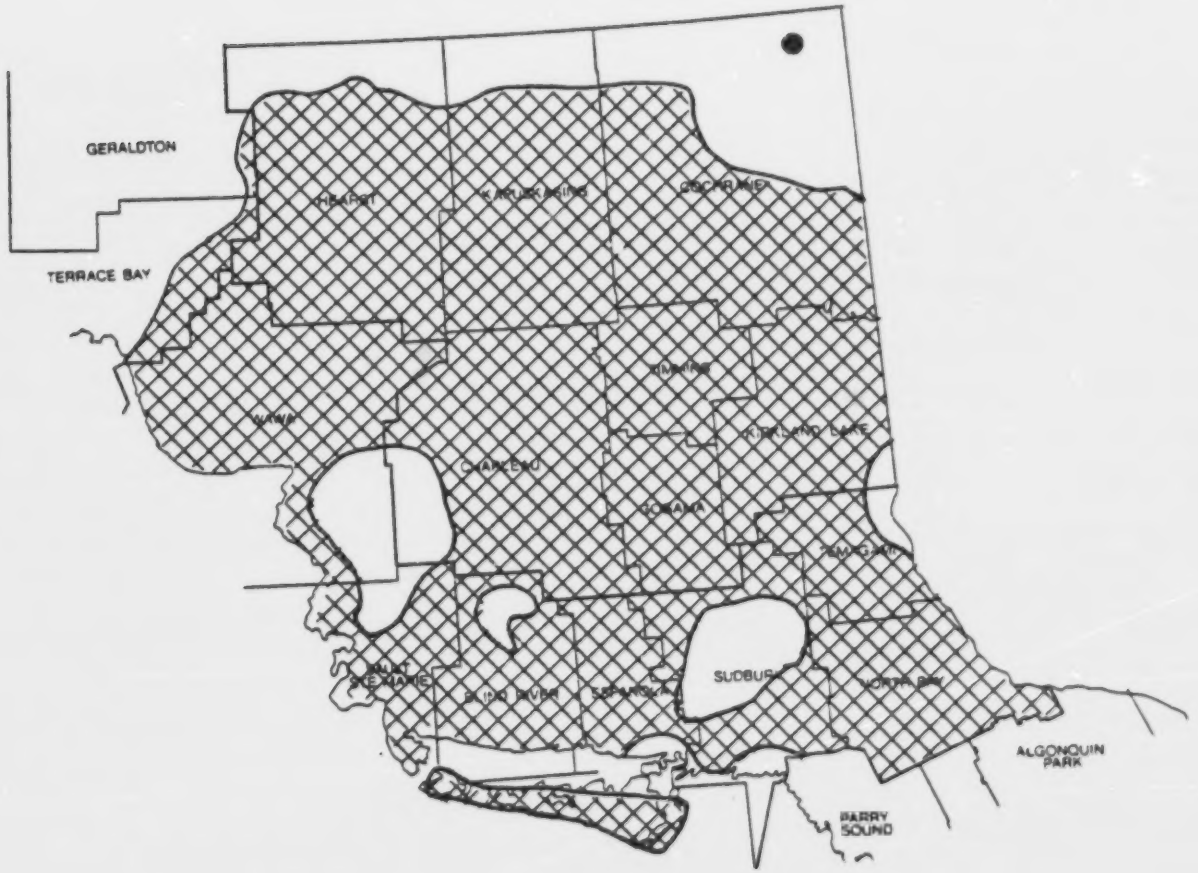
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1979

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

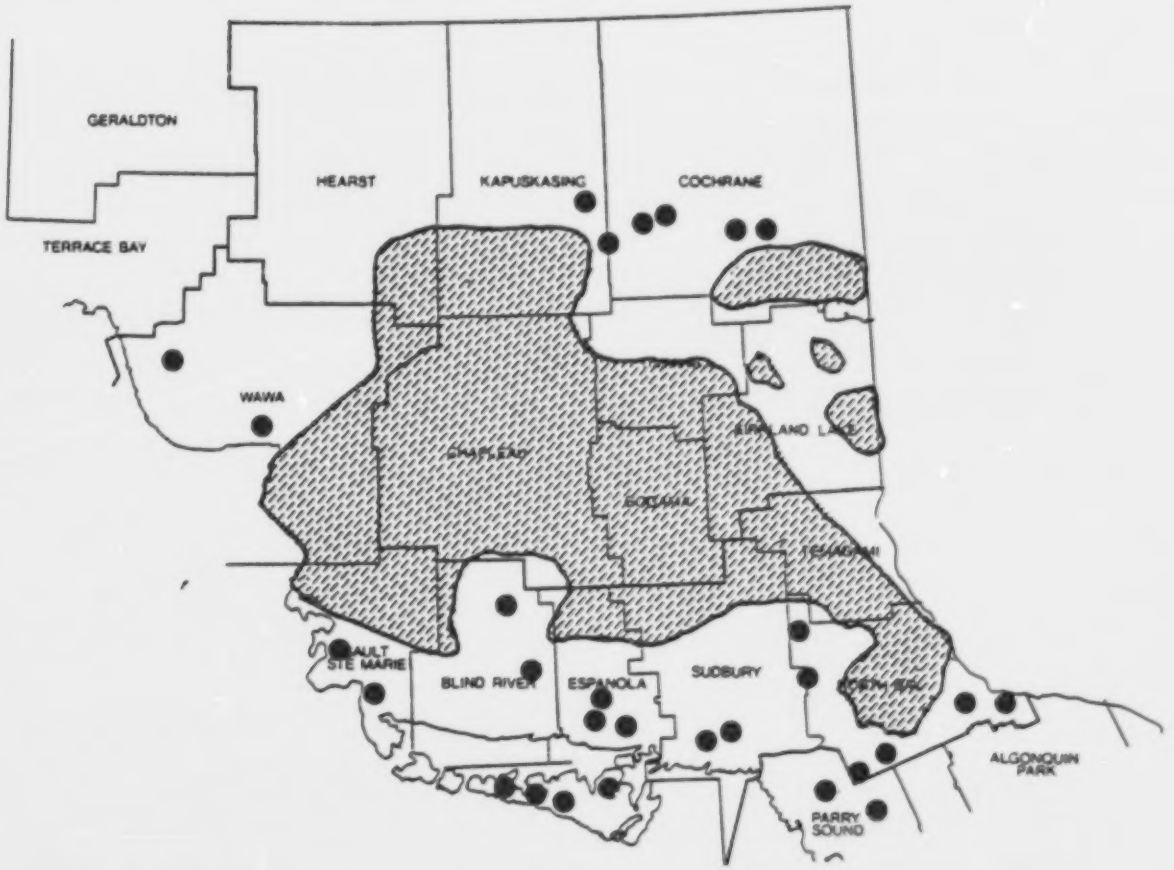
Spruce Budworm

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1980

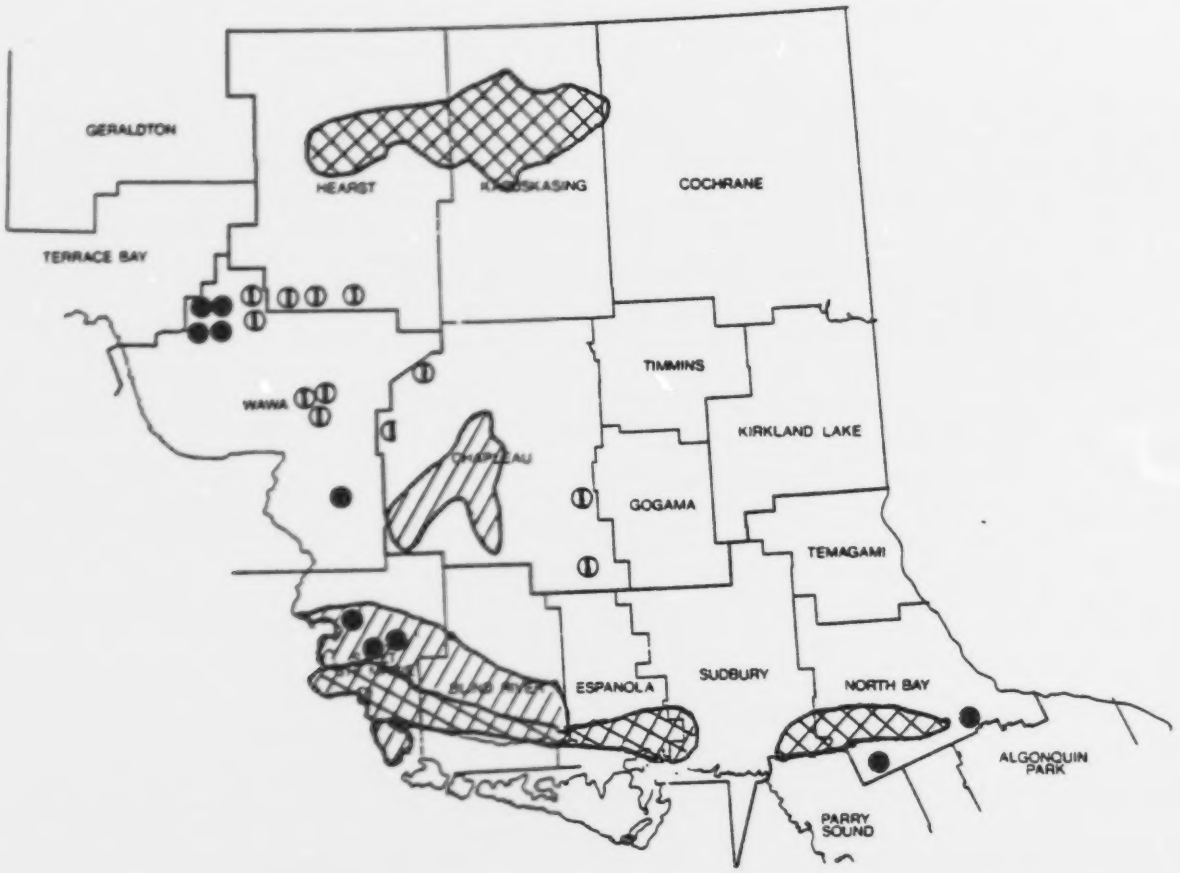
LEGEND

Mortality or

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

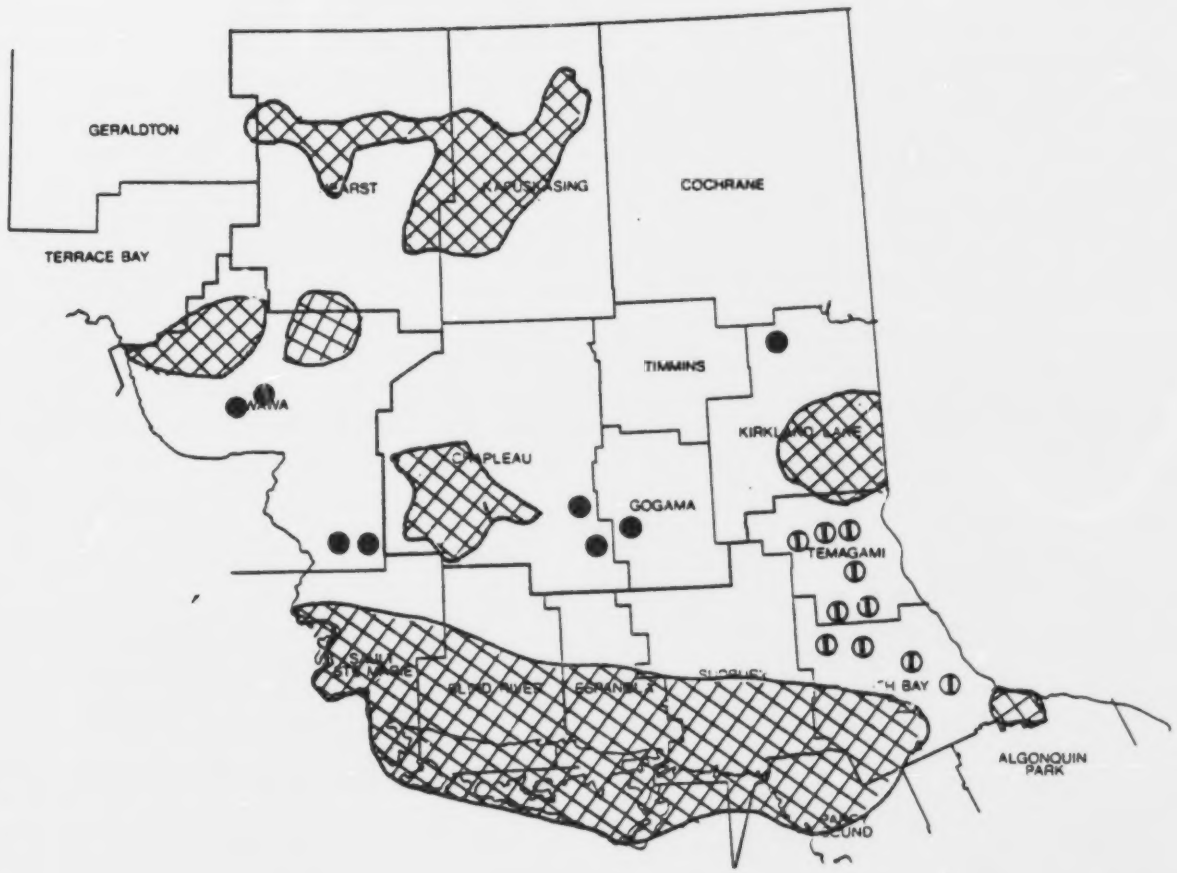
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

0 Miles 60

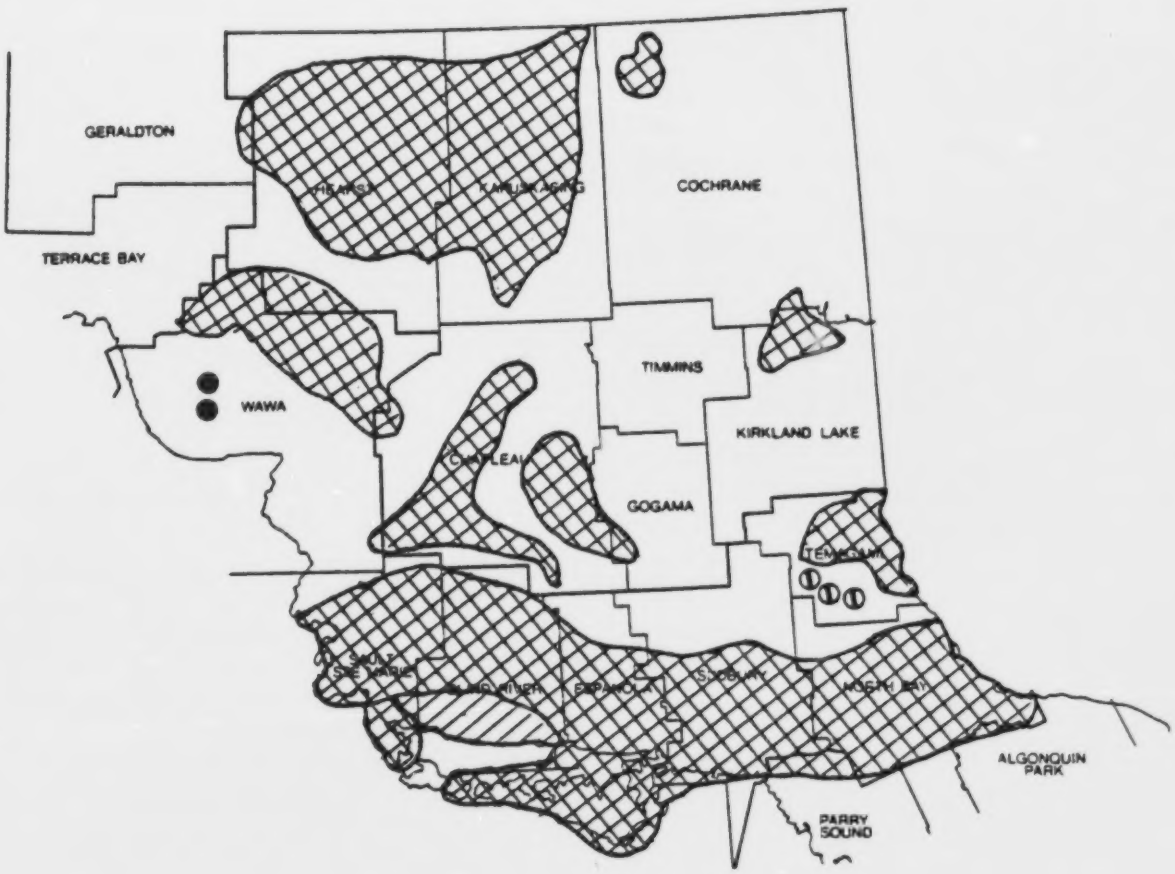
0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

0 Miles 60

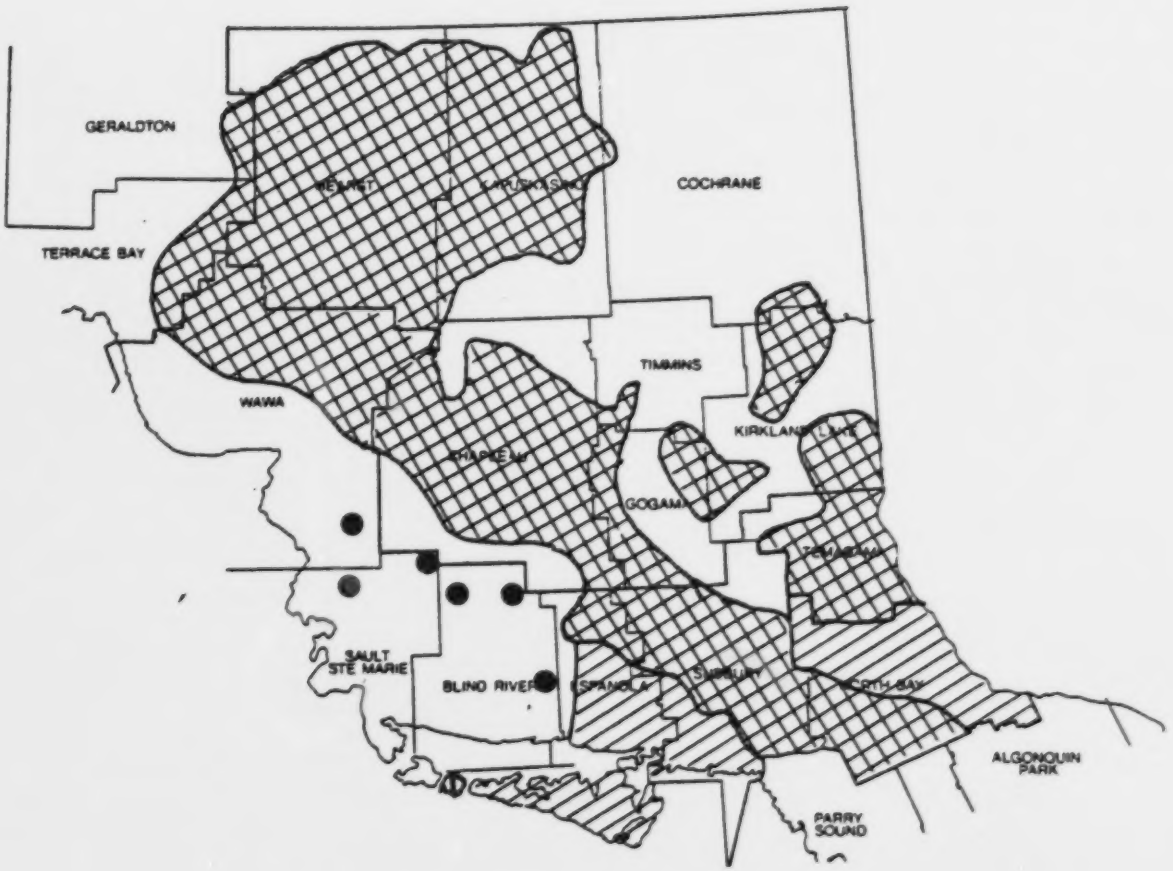
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

0 Miles 60

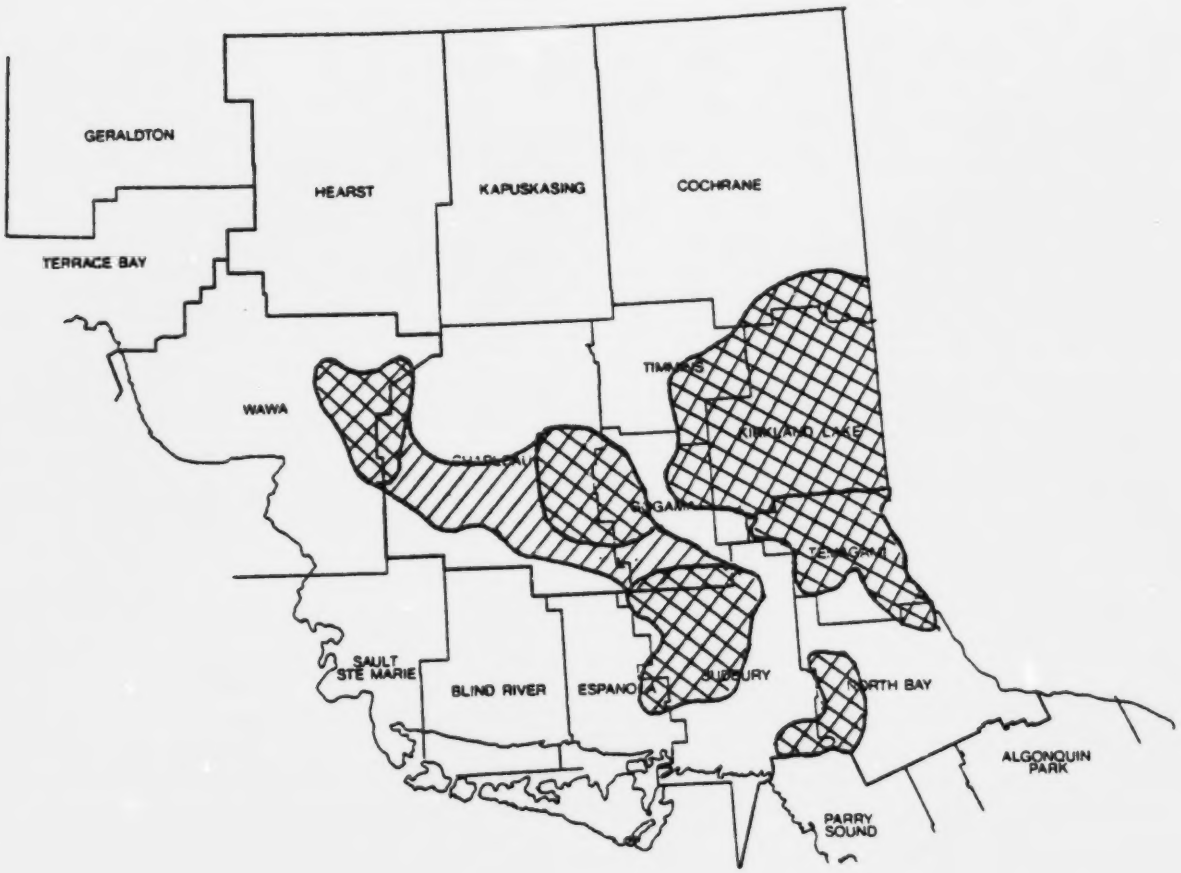
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1955

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1957

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1961

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ①

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1964

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ① or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1965

LEGEND

Light defoliation ① or

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1966

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliaiton occurred in 1967

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1968

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1969

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1974

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

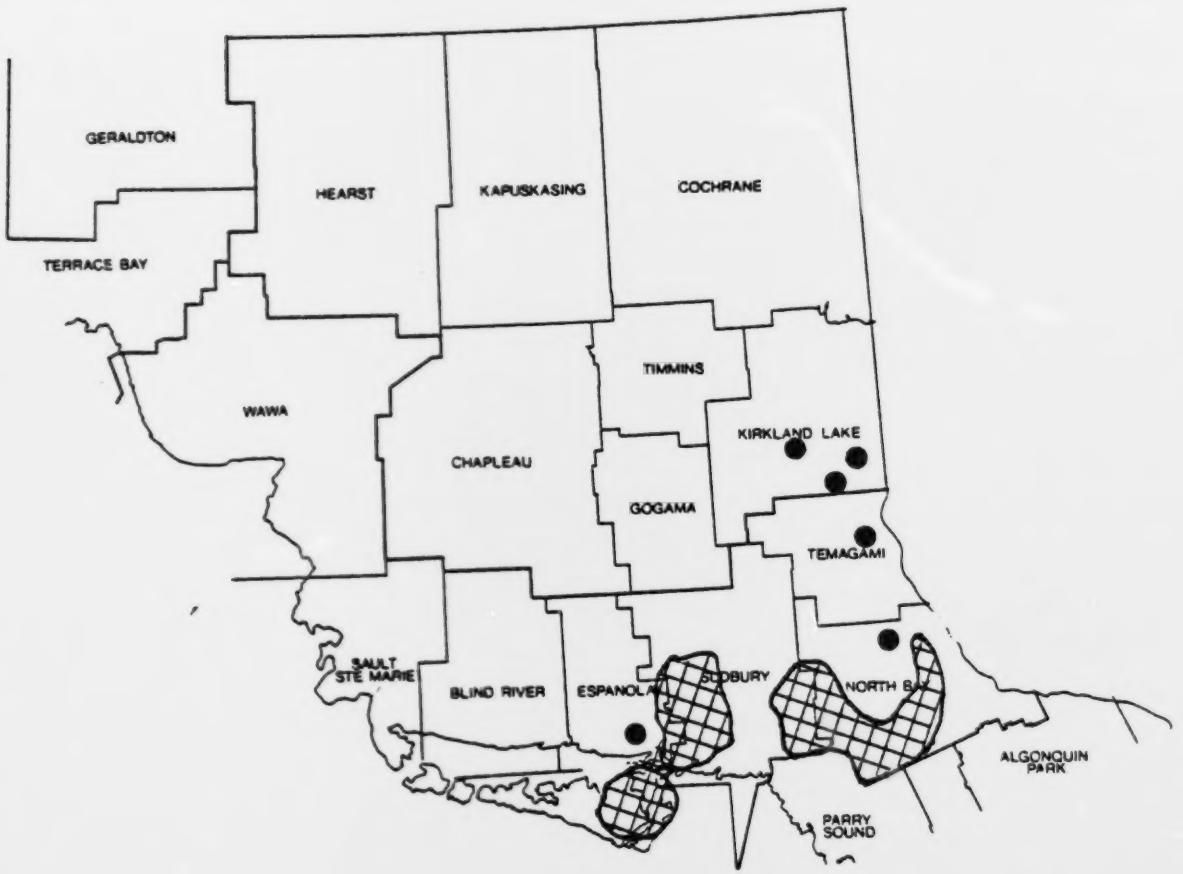
Forest Tent Caterpillar

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

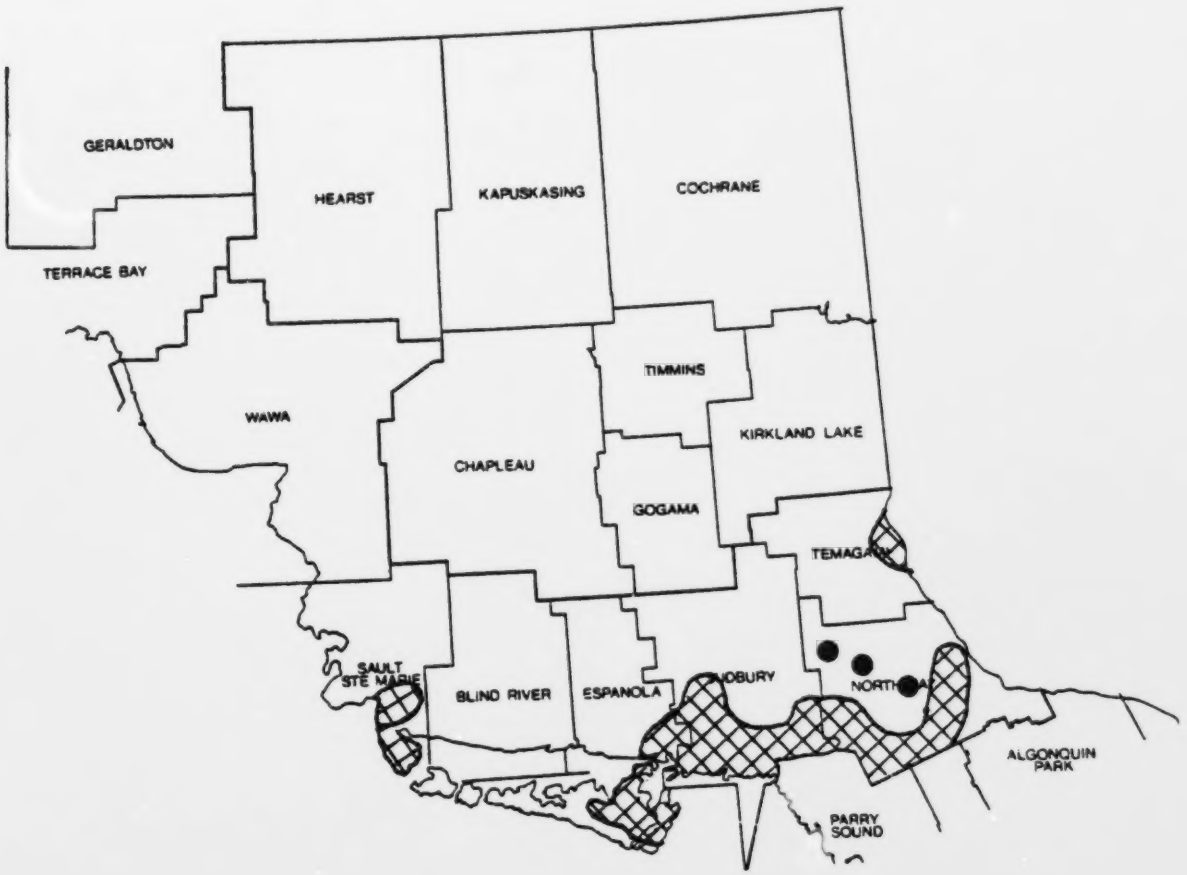
Forest Tent Caterpillar

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Ambermarked Birch Leafminer

Areas with which defoliation occurred in 1958

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation

Moderate-to-severe defoliation